

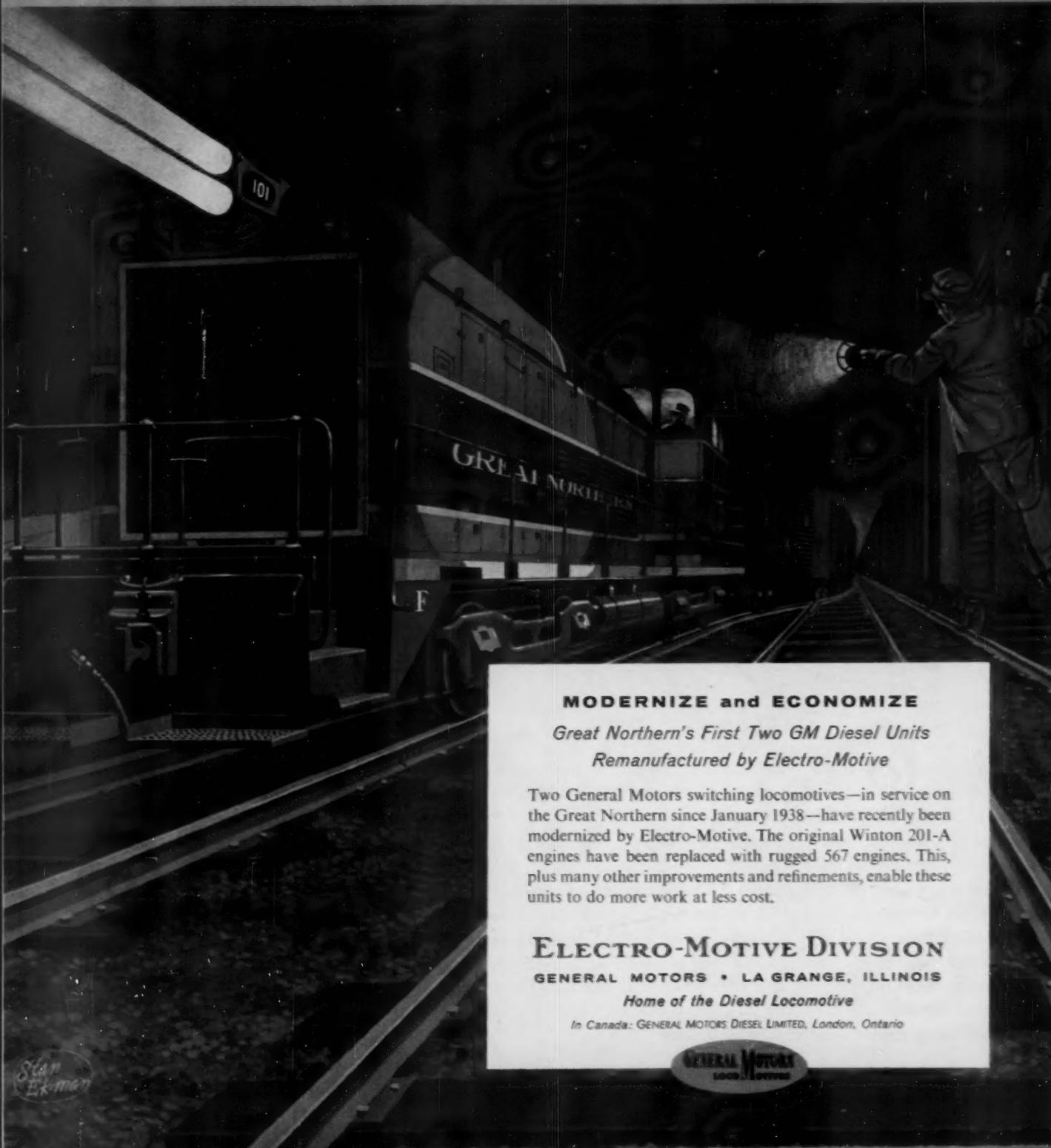
June 11, 1956

Are Economy Fuels a Good Buy? . . . p. 34

# RAILWAY AGE

WORKBOOK OF THE RAILWAYS

THE INDUSTRY'S ONLY WEEKLY NEWSMAGAZINE



#### MODERNIZE and ECONOMIZE

*Great Northern's First Two GM Diesel Units*

*Remanufactured by Electro-Motive*

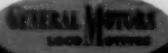
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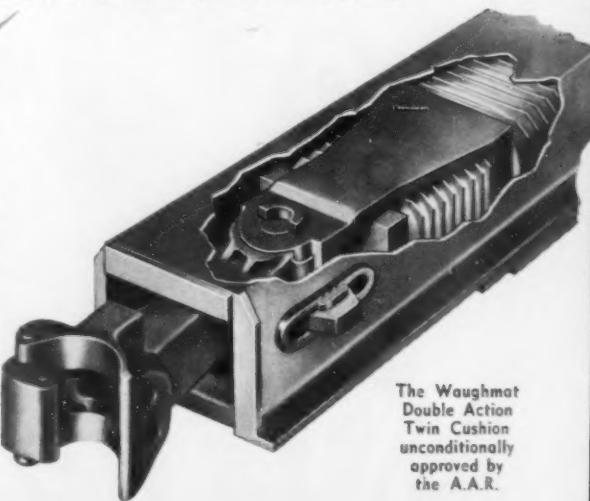
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Service like this, with its multiple high impact shocks, would quickly wear out any ordinary ore cars.

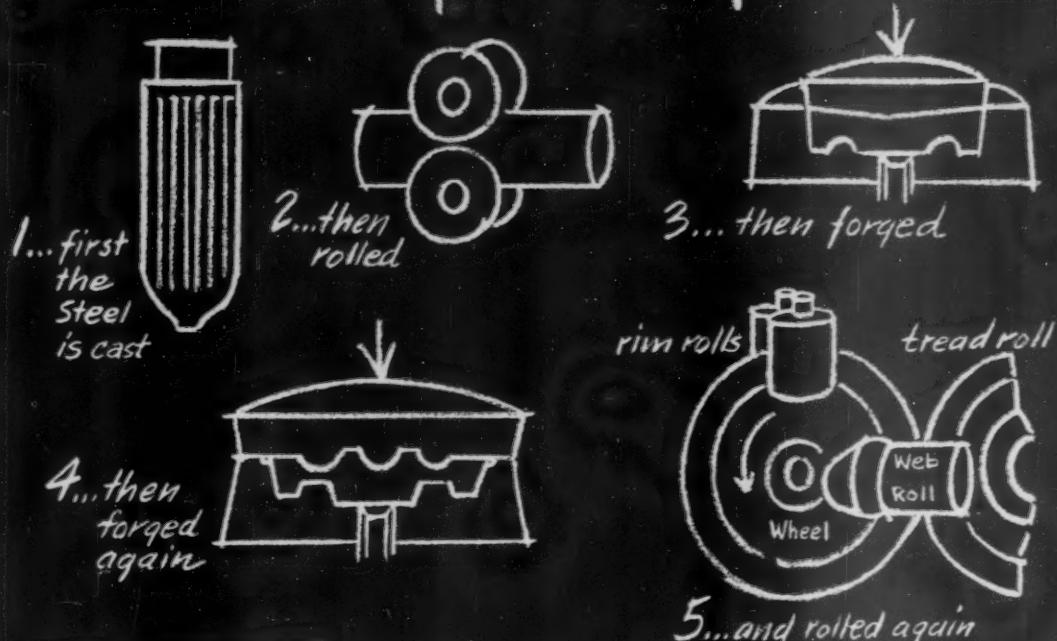
But these Orinoco cars are not ordinary ore cars. Orinoco Mining Company engineers designed the cars . . . designed them especially for this heavy duty service. To provide the utmost practicable protection against excessive impacts, all of the original 560 Orinoco ore cars, 5 cabooses, and 9 diesel locomotives were equipped with Waughmat Double Action Twin Cushions . . . America's best known and most widely used modern car cushioning device



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eral fundamental steps that contribute directly to the desired result.

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This new UNION electronic circuit can also be superimposed on signal line circuits . . . and with no mutual interference . . . to control additional functions, such as block indications, without the need for additional line wires.

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can be superimposed on existing track circuits WITHOUT the need for additional insulated joints.



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TO TRANSMITTER

TRANSMITTER

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## CONTENTS and

# Week at a Glance

### "Watchful waiting" on piggyback . . .

. . . is still the attitude of some roads, which they base on what they believe to be T-O-F-C's high initial costs and uncertain profits. Most such roads add that changing conditions might alter their stand. . . . p.7

### Net income in April . . .

. . . was \$8 million above that for April 1955 and, though the four-months' net was down \$5 million from the same period last year, it was relatively better than for the first quarter. . . . p.8

### FORUM: "Internal subsidies" . . .

. . . exist in important, and sometimes unsuspected, segments of most railroads' activities. They sustain those real deficit operations which are a drain on the earnings realized from the services that do better than break even. With meaningful cost data to guide the decisions, many of these internal subsidies can be effectively dealt with. . . . p.33

### What is "economy" fuel? . . .

. . . The answer depends on a whole host of circumstances. The more significant ones are dealt with in our comprehensive study of this vital matter, based on the experience of numerous railroads and oil industry people. . . . p.34

### "Deep freeze" for rail joints . . .

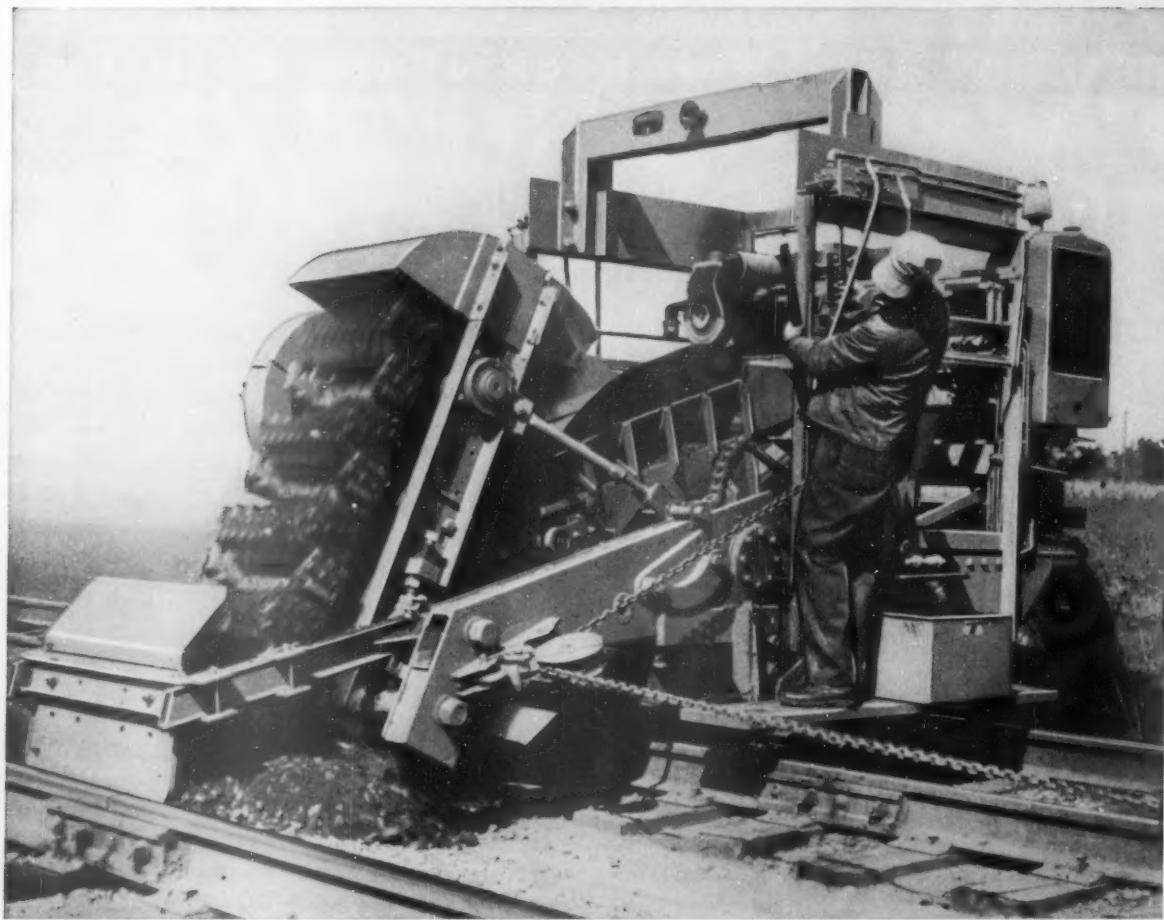
. . . is, in effect, what several roads are trying out in a search for a rail-laying technique that will combine most of the advantages of continuous welded rail with those of traditional American practice. . . . p.38

### Management needs cost accounting . . .

. . . and some traditional paperwork chores may have to be discarded to absorb part of the extra expense, Santa Fe President Gurley told the AAR Accounting Division convention at Los Angeles. . . . p.41

### The field of railroad communications . . .

. . . is expanding in all directions, some of which were con-



All types of maintenance equipment, such as this ballast machine excavating inter-track ballast, can now be serviced with ONE grease...Esso Multi-Purpose Grease.

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Operating revenues, four months	
1956	\$3,413,453,838
1955	3,104,423,778
Operating expenses four months	
1956	\$2,652,535,732
1955	2,371,029,566
Taxes, four months	
1956	\$361,835,961
1955	328,525,317
Net railway operating income, four months	
1956	\$313,059,632
1955	322,371,153
Net income, estimated, four months	
1956	\$236,000,000
1955	241,000,000
Average price 20 railroad stocks	
June 5, 1956	102.11
June 7, 1955	97.78
Carloadings revenue freight	
Twenty-one weeks, 1956	15,064,944
Twenty-one weeks, 1955	14,118,580
Average daily freight car surplus	
Wk. ended June 2, 1956	12,026
Wk. ended June 4, 1955	14,799
Average daily freight car shortage	
Wk. ended June 2, 1956	4,983
Wk. ended June 4, 1955	8,944
Freight cars on order	
May 1, 1956	137,436
May 1, 1955	17,930
Freight cars delivered	
Four months, 1956	20,972
Four months, 1955	10,013
Average number of railroad employees	
Mid-April 1956	1,048,111
Mid-April 1955	1,011,753

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## Workbook of the Railways

## Week at a Glance

CONTINUED

sidered at the annual meeting of the AAR Communications Section. . . . p.42

## How to make profitable rates . . .

. . . in competitive situations where traditional differentials produce only phantom rates, yielding no traffic and no revenue —that is a question dealt with interestingly by two readers who have accepted the challenge posed in a Railway Age editorial discussion. . . . p.44

## B R I E F S

## Another diesel transmission . . .

. . . A German-built diesel-hydraulic road switcher has started three months of service tests on the Canadian National. The 750-hp MAK unit now operating on CNR's Quebec and Nova Scotia lines will later go to other Canadian roads for testing. Hydraulic transmission is not the same one used on Baldwin-built Train-X locomotives.

## Your picnic need a private train? . . .

. . . The Long Island's two rail diesel cars, with combined seating capacity of 190, have been made available, under a charter-your-own-train plan, to groups planning such things as picnics, fishing trips and clambakes. The cars are now in shuttle service between Babylon and Patchogue, from which they can be withdrawn on short notice.

## Man of the year . . .

. . . in international management is what Canadian Pacific President N. R. Crump has been designated by the National Management Association. His "manifold contributions to free enterprise and the management profession" were cited in Mr. Crump's selection.

## Iron ore shipments are up . . .

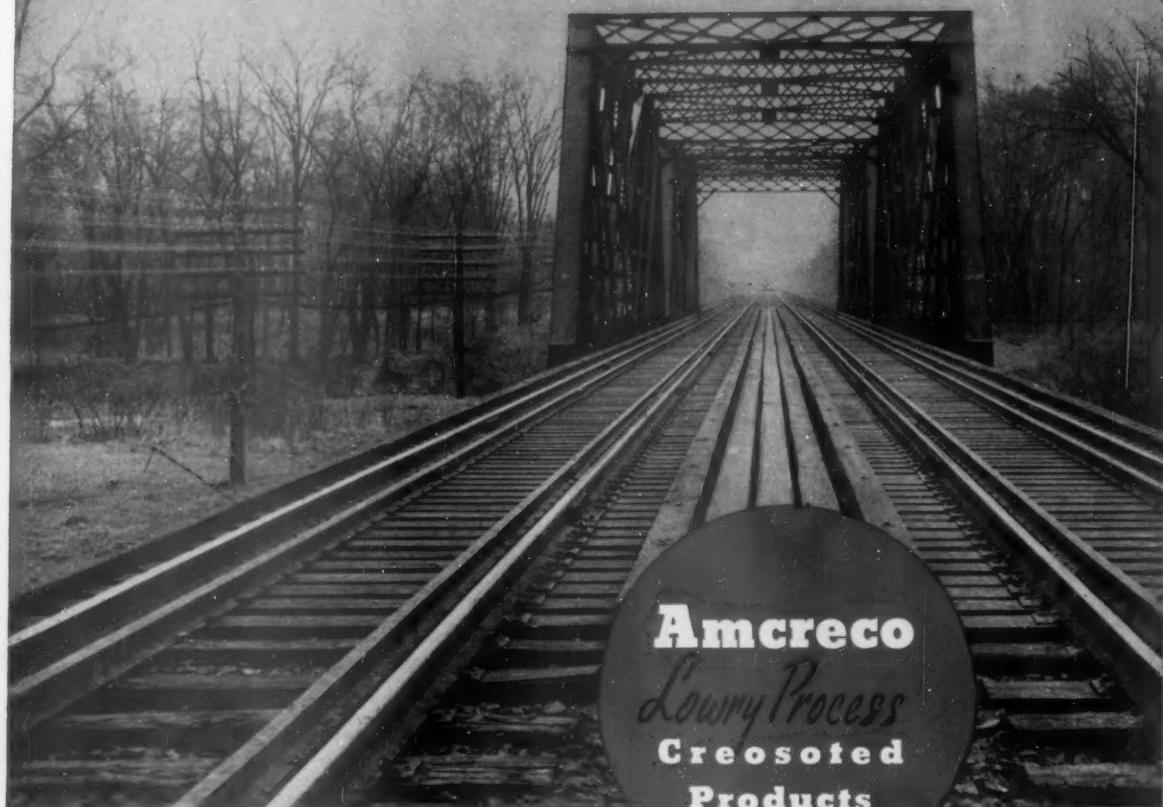
. . . on the Great Lakes, as compared to last year. The total movement in May, out of U.S. and Canadian ports, was 12,553,857 tons, as compared to 11,605,747 tons in May 1955.

## New York Central's "Xplorer" . . .

. . . began regular Cleveland-Cincinnati service June 3. Postponement from the originally scheduled May 27 starting date was to permit placing the new train on public exhibition for two days in New York's Grand Central Terminal.

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## WHAT! NO PIGGYBACK?

## T-O-F-C Holdouts Still Wary

Because it has become convinced that trailer-on-flat-car service is "an asset value to truckers" and that terminal costs would nullify revenues, one mid-western road has alined itself with the "holdouts" against piggyback.

"If we haul the trucker's trailer at a lower cost than he can do it himself, he can reduce his rates and improve his competitive position," a spokesman for this road told Railway Age.

Nevertheless, this road, like most others not yet offering the service that has met with such general acclaim, held out the possibility that changing conditions might alter its stand.

So favorable have been the reports from roads most deeply involved in the service — discounting what is thought to be a "temporary" slump while truck rates are raised to match the railroads' — that no railroad which logically could offer piggyback seems willing to shut the door on it entirely.

**Typical Position** — The reply C. E. Bell, vice-president, Seaboard Air Line, gave Railway Age when he was asked to tell of his road's piggyback plans, is typical: "The only thing I can say is that we have been giving the matter very careful study and that study is continuing. However, we have as yet reached no definite conclusion."

Reluctance by any railroad to give a final "no," considering the success other roads have had with the service, would seem well founded. Everywhere, news is of expanded and extended piggyback coverage, with several new roads having begun the service in recent months, the Boston & Maine being one of the latest.

The Pennsylvania — recently joined in the Trailer Train pooling plan by the Missouri Pacific, Frisco and Missouri-Kansas-Texas, in addition to the Norfolk & Western — is among the most enthusiastic about the future of piggyback.

The PRR reports it earned \$5.7 million in piggyback revenues last year and expects to "at least double that in 1956." Also, the Pennsylvania finds that its piggyback loss-and-damage has come to only "one or two cents on the dollar" — a rock-bottom figure.

The Southern Pacific, too, is well pleased with its t-o-f-c traffic, having reported hauling its 100,000th trailer last year and noting that "most of this traffic has been recaptured from highway carriers." What's more, the SP is after additional volume, believing it develops new business with "steady extensions" of service.

**Potent Competition** — Truckers, too, recognize the strength of piggyback competition. P. H. Small, financial vice-president, Pacific Intermountain Express Company, said recently that in areas of highway congestion and great traffic, "piggyback can probably give a competitive

service on heavy volume routes." He alluded to the east, but suggested that the Pacific Coast might also be vulnerable, particularly between Los Angeles and San Francisco.

The edge is still with the trucker in LCL-LTL competition, Mr. Small declared, because piggyback has not solved the "problem" of the trucker's "inherent and insurmountable advantage over rail: the trucker moves half a carload at a time while the railroad has to assemble 70 carloads to move, and every time it wants to drop or pick up a car, it must stop 69 or 70 others."

Such considerations as that may have prompted this New York Central reply to a Railway Age inquiry:

"The New York Central still has under study various forms of piggyback operation but it has not decided whether any form of piggyback will be introduced at all."

There is, too, the attitude of the



## \$2,000 for First Prize in FRP Essay Contest

George W. Wilson (second from right), economics instructor at Middlebury College, accepts \$2,000 check — for his winning entry in essay contest sponsored by the Federation for Railway Progress — from James G. Lyne (second from left), editor of Railway Age and FRP chairman.

Looking on, at left and right, respectively, are President Samuel S. Stratton of the college, and G. A. Caverly, president of the Rutland. Second prize of \$1,000 was awarded to the estate of the late Dr. G. Lloyd Wilson, who, until his death in April, was a professor at the University of Pennsylvania.

Central's president, A. E. Perlman, who as far back as October 1954 questioned the wisdom of spending \$15,000 for a special flat car plus truck-trailer cost. Mr. Perlman also has questioned the "practicality" of piggybacking, commenting that rail service like the NYC's "Early Bird" trains takes trailers off the highways just as well as piggyback does.

**Special Problems** — Some roads like the Florida East Coast and the Gulf, Mobile & Ohio have particular traffic situations which they think are not readily adaptable to piggyback. The GM&O, for instance, notes that most terminals between which it could provide the service involve

relatively short hauls and light loads. Low available rates and expenditure of \$3 million for flat cars and terminal facilities militate so strongly against t-o-f-c that the road simply "can see no profit in it," according to one spokesman.

The FEC, according to J. W. Martin, trustee, feels piggyback "could not be made to pay" because of the nature of the road's originating traffic—mostly fruits and vegetables. Mr. Martin also comments that "so far it has not appeared practical to work out any joint haul service with a piggyback deal that would prove profitable." He notes, however, that the FEC is not "prejudiced" against

piggyback, and promises that the service will be instituted if it ever should prove feasible.

The Southern, Norfolk Southern and Milwaukee report they have not yet made final decisions on offering the service, while the Atlantic Coast Line states that "we are not planning such operation . . . in the foreseeable future."

The Rock Island, an originator of piggybacking many years ago, may be tying its t-o-f-c future to the ACF "Adapto" car, of which it has bought 50, although this road says nothing "definite" can be reported on its plans and admits only to "some experimentation."

## April Net Was Up \$8 Million

It was \$73 million, compared with \$65 million in April 1955—Four-months' net was down \$5 million

Class I railroads in April had estimated net income, after interest and rentals, of \$73,000,000, according to the Bureau of Railway Economics of the Association of American Railroads.

This was an increase of \$8,000,000 above the net of \$65,000,000 reported for April 1955. It improved the year's cumulative net which had

been down \$13,000,000 from last year at the end of the first three months. The four-months' figure was off only \$5,000,000—from \$241,000,000 to \$236,000,000.

April's net railway operating income, before interest and rentals, was \$94,159,387, compared with \$87,303,611 for April 1955. The four-months' net railway operating

income was \$313,059,632, compared with \$322,371,153 in 1955.

Seventeen Class I roads failed to earn interest and rentals in this year's first four month. The rate of return for the 12 months ended with April averaged 4.17%, compared with 3.72% for the 12 months ended with April 1955.

### CLASS I RAILROADS—UNITED STATES

Month of April

	1956	1955
Total operating revenues	\$877,822,095	\$796,500,626
Total operating expenses	671,031,930	602,555,040
Operating ratio—per cent	76.44	75.65
Taxes	92,509,249	85,529,035
Net railway operating income (Earnings before charges)	94,159,387	87,303,611
Net income, after charges (estimated)	73,000,000	65,000,000

Four Months ended April

	1956	1955
Total operating revenues	\$3,413,453,838	\$3,104,423,778
Total operating expenses	2,652,535,732	2,371,029,566
Operating ratio—per cent	77.71	76.33
Taxes	361,835,961	328,525,317
Net railway operating income (Earnings before charges)	313,059,632	322,371,153
Net income, after charges (estimated)	236,000,000	241,000,000

### B&O T-O-F-C to Use Dry Ice Refrigeration Units

One experimental refrigerated highway trailer equipped with a Clifford dry ice cooling system has entered regular service on the Baltimore & Ohio. Twenty-five more refrigeration units will be ordered for (Continued on page 10)



Railroads at Pittsburgh Show the Way

Railroad representatives manned this "broadcast booth" on 12-car train used in May 21 rail-industry tour of Pittsburgh for 600 civic and business leaders. Narrators pointed out sights of interest to passengers. In "booth" are (left to right), A. H. Farrar, freight traffic manager, Baltimore &

Ohio; M. S. Smith, vice-president and regional manager, Pennsylvania; B. F. Isenberg, PRR district sales manager; and W. R. Downey, general agent, Terminal Railroad Association of St. Louis. Tour was sponsored by Community Relations Committee of Pittsburgh Railroads.

**Carloadings Down.**—Loadings of revenue freight in the week ended June 2 totaled 719,209 cars, the Association of American Railroads announced on June 7. This was a decrease of 69,088 cars, or 8.8%, compared with the previous week; an increase of 9,858 cars, or 1.4%, compared with the corresponding week last year; and an increase of 106,895 cars, or 17.5%, compared with the equivalent 1954 week.

Loadings of revenue freight for the week ended May 26, 1956, totaled 788,297 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS			
For the week ended Saturday, May 26, 1956			
District	1956	1955	1954
Eastern	123,744	128,784	114,439
Alleghany	158,032	154,645	127,123
Pocahontas	65,501	62,210	48,588
Southern	132,466	125,750	117,111
Northwestern	127,421	130,394	117,058
Central Western	121,961	126,099	110,395
Southwestern	59,172	57,707	54,578
<b>Total Western Districts</b>	<b>308,554</b>	<b>314,200</b>	<b>282,031</b>
<b>Total All Roads</b>	<b>788,297</b>	<b>785,589</b>	<b>689,292</b>
<b>Commodities:</b>			
Grain and grain products	51,041	50,068	45,459
Livestock	6,138	6,014	6,395
Coal	140,135	129,430	106,153
Coke	13,031	12,187	7,395
Forest Products	48,191	44,872	42,667
Oil	84,275	83,928	72,033
Merchandise, l.c.l.	60,171	66,146	61,347
Miscellaneous	385,315	392,944	347,843
May 26	788,297	785,589	689,292
May 19	778,997	769,579	681,967
May 12	777,606	752,645	677,540
May 5	770,558	736,904	647,954
April 28	778,398	725,900	647,925
<b>Cumulative total, 21 weeks</b>	<b>15,064,944</b>	<b>14,118,580</b>	<b>13,152,973</b>

**In Canada.**—Carloadings for the seven-day period ended May 21 totaled 77,562 cars, compared with 86,126 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

Totals for Canada:	Revenue Cars Loaded	Total Cars Rec'd from Connections
May 21, 1956	77,562	29,662
May 21, 1955	85,837	31,952
<b>Cumulative Totals:</b>		
May 21, 1956	1,558,553	698,066
May 21, 1955	1,407,053	628,649

## New Equipment

### FREIGHT-TRAIN CARS

► **Minneapolis & St. Louis.**—Will order 380 new cars, estimated cost \$3.1 million including 250 hopper cars, 100 covered hopper cars and 30 compartmentized box cars. Delivery schedules were not immediately announced by the road.

► **Virginian.**—Ordered materials for construction in Princeton, W. Va., shops, of 500 70-ton steel hopper cars, 35 55-ton pulpwood cars and 25 steel caboose cars; work on caboose and hopper cars scheduled to begin in second quarter 1957, on pulpwood cars, in September 1956.

### PASSENGER-TRAIN CARS

► **Jersey Central Lines.**—Ordered three rail diesel cars, Budd Company; cost exceeds \$500,000; delivery expected next fall.

## Purchases and Inventories

► **Three-Months' Purchases Up \$102.3 Million.**—Purchases by domestic railroads of all types of materials during first three months of 1956 were almost \$102.3 million above those in same 1955 period; following tables of inventories and purchases were prepared by Railway Age research department:

PURCHASES*	March 1956	Three Months 1956	Three Months 1955
(000)	(000)	(000)	(000)
Equipment**	\$ 32,810	\$ 110,503	\$ 123,505
Rail	8,474	27,617	24,282
Crossties	6,379	17,801	13,230
Other Material	112,018	325,039	212,596
Total from Manufacturers	\$159,681	\$480,960	\$373,613
Fuel	37,815	111,121	115,197
<b>Grand Total</b>	<b>\$197,496</b>	<b>\$591,081</b>	<b>\$488,810</b>

\* Subject to revision.

\*\* Estimated value of orders.

INVENTORIES†	Mar. 1, 1956	Mar. 1, 1955
(000)	(000)	(000)
Rail	\$ 55,287	\$ 45,728
Crossties	91,344	110,520
Other Material	512,363	489,900
Scrap	19,146	18,488
Fuel	30,659	32,272
<b>Total</b>	<b>\$708,799</b>	<b>\$696,908</b>

\* Subject to revision.

† All total inventory figures taken from ICC statement M-125 for month indicated.

## New Facilities

► **Soo Line.**—Program for this year includes laying nine miles of new 100-lb welded rail and six miles of bolted rail; 25 miles of relay and 100 miles of ballasting; placing 370,000 treated cross ties; eight bridges will be replaced, and further work done to eliminate cuts which have caused snow problems.



### BofLE Vanguard Prepares for Union Convention

Preparing for the forthcoming 13th triennial convention of the Brotherhood of Locomotive Engineers, which begins June 11, are these members of the union's constitution and by-laws committee. Left to right, seated, are: C. J. Coughlin, of the Spokane, Port-

land & Seattle; Kenneth Myers (committee chairman), Reading; and A. R. Shannon, Canadian National; standing, in the same order, are B. P. Knott, Charleston & Western Carolina; and W. A. Hirst, Southern Pacific.

*(Continued from page 8)*

T-O-F-C service if the experiment proves successful.

This is said to be the first time any railroad has equipped one of its own piggyback trailers with units of this type. Many shippers are reportedly interested in the new service.

A standard B&O 24-ft, 4 3/8-in. trailer has been insulated and

equipped with dry ice bunkers and refrigeration coils. See Railway Age, May 29, 1955, p. 23 for a complete description of the Clifford unit.

The B&O pilot unit has its refrigeration coils in the ceiling, but all future trailers will have the coils on the sides. Each refrigeration unit holds 1,000 lb of dry ice to keep the unit functioning nearly 60 hours.

### Coal Pipeline Can Help RRs, Too

The coal pipeline will be a reality within the next year when a 110-mile line, stretching from Katlain, Ohio, almost to Cleveland, goes into service. The project is backed by the Pittsburgh Consolidation Coal Company, but three railroads have options to buy a 45% interest.

Cost of the line is expected to run between \$9 and \$10 million. It will be able to pump some 4,000 tons of coal daily.

**Big Customer**—Pittsburgh Consolidation has a 15-year agreement

with Cleveland Electric Illuminating Company to deliver 1,200,000 tons of coal annually to the utility's Eastlake plant, 20 miles from Cleveland, where the piped coal is to be prepared for use as fuel.

Three railroads—New York Central, Pennsylvania and Nickel Plate—have participated in coal movement to Eastlake, and are, according to the coal company, cooperating in the pipeline undertaking. They have options to purchase up to 15% interest each in the line.

The roads felt they could not oppose the pipeline, although they recognize it as a threat to their coal traffic, because the state of Ohio had granted the right of eminent domain to common carrier oil pipelines.

**Potential Benefits**—Felix S. Hales, president of the Nickel Plate, recently told the New York Society of Security Analysts that substantial amounts of higher grade coal which would not ordinarily be mined, would be extracted along with pipeline coal and would move by rail.

Also, James M. Symes, president of the Pennsylvania, has pointed out that the railroads involved will "get an extensive working knowledge" of coal pipeline transportation, both engineering and economical. "We will," he said, "help increase potential output of what should continue to be the world's largest coal mine, and which has in the past and will continue to be a large shipper by rail." (Railway Age, June 13, 1955, p. 66).

"There is no reason why we can't pump coal any distance; this first pipeline will point the way," a Pittsburgh Consolidation spokesman told Railway Age. A coal pipeline is one way to attack the "high freight rate problem" he commented, calling attention to his company's annual report, which stressed the need for the coal industry to meet the competition of other fuels.

"Both oil and gas," the report said, "enjoy much lower transportation charges than coal, and our newest competitor, atomic energy, is freightless."

### How to Keep Attorney Gen. from Thwarting ICC

Contending that the U.S. Attorney General and the Interstate Commerce Commission both "rest on the horns of a dilemma" regarding their relationships, Robert W. Minor, member of the Interstate Commerce Commission, set forth what he believed would ease the situation, at a luncheon address before the recent annual meeting of the Interstate Commerce Commission Practitioners Association in Philadelphia.

Pointing out that the attorney general serves as (1) chief legal officer of the U.S., (2) chief prosecutor for the federal government and (3) lawyer for the departments and agencies of the executive branch, the

speaker concluded that the present attorney general's position is "difficult," while "that of the commission is impossible."

"No one in private business and in his right senses would retain as a lawyer a person who was representing parties on the other side of the case and, more important, no lawyer can conceivably represent two completely diverse sides." The facts, according to Commissioner Minor, lead to one inescapable conclusion: "So long as the Attorney General has the statutory duty to defend the orders of the commission, and so long as he has the discretion to choose to defend, not to defend, or to attack the orders of the commission, then he is in fact a reviewing authority for actions of the commission."

Commissioner Minor would renew the commission's own recommendation, first made in 1913, "that the defense of its orders be returned to it by statutory amendment." As second choice, he would suggest removing the responsibility for enforcement and defense of commission orders from the Anti-Trust Division of the Department of Justice.

Finally, he would suggest "earnest pursuit of the course the commission and the department have already embarked upon" — continuing liaison by the ICC and responsible officers of the Department of Justice.

### Elkins Act Case Brought Against the Southern

The Interstate Commerce Commission has issued a notice reporting that the United States attorney at Louisville, Ky., has filed criminal informations against the Southern and the Louisville Produce Association, Inc.

The informations, filed in the federal district court at Louisville, charge the railroad with giving, and the association with receiving, unlawful concessions, in violation of Section 1 of the Elkins Act, with respect to construction of a produce terminal at Louisville.

"The concessions charged in the informations," the commission's notice said, "consist of the acceptance by the carrier from the association of a second mortgage for the full purchase price of land on which the produce terminal was constructed; improvement of the land at carrier's expense; pledging of the carrier's



### RF&P "Caboose Special" Gets a Big Turnout

A novel excursion for which the Richmond, Fredericksburg & Potomac made up a train of 12 cabooses for an outing at Quantico Marine Base drew more than 350 boys and adult guardians at Richmond recently. Some are shown after arrival at the base,

where they inspected naval guns, dined in the Marine messhall and witnessed amphibious and helicopter operations. Cabooses were drawn from surplus and from storage and given thorough testing and cleaning before trip was made.

credit through a lease and lease-back device enabling the association to borrow money from an insurance company and from a bank; assumption by the carrier of the costs of bringing sewer and water facilities to the produce terminal; payment by the carrier of one-fourth of the architect's fees for the plans, specifications, and supervision of construction of the produce terminal; and donation by the carrier to the state of Kentucky of a strip of land to widen a road essential to operation of the produce terminal."

The investigation leading to the filing of the informations was conducted by the commission's Bureau of Inquiry, the notice said. It added that the investigation was "one of several made by that bureau at the direction of the commission in Doc-

ket No. 31902." That case involves the petition filed by the Atlantic Coast Line, the Nashville, Chattanooga & St. Louis, The Louisville & Nashville, and the Atlanta & West Point. The petition asked the commission to investigate Southern practices in connection with construction of produce terminals (Railway Age, Oct. 3, 1955, p. 10) The Southern has insisted that the practices are legal and in the public interest (Railway Age, Oct. 31, p. 9).

The commission decided to conduct no formal investigation. Instead, it ordered the Bureau of Inquiry to "proceed actively with informal investigations of the several situations involved, progressing one or more of them to the point where it can be determined whether criminal proceedings should be instituted."

### Research Vital, Protective Unit Told

Research is the means of tapping a "limitless reservoir" of knowledge that can be used in doing a better transportation job 10, 20 and 100 years from now, the Protective Section of the AAR was told at its annual meeting at St. Louis recently.

Armstrong Chinn, president of the Terminal Railroad Association of St. Louis, said "research to develop more improved methods and improved tools is going on constantly." He emphasized that railroads are embarked on a concerted program to find "answers to problems that must be solved if they are to maintain their leadership in transportation."

Richard G. May, vice-president, AAR operations and maintenance department, told the railroad police chiefs and other law enforcement officers that their responsibilities are intensified by today's peacetime peak traffic volume.

"Whether it be in connection with transportation of passengers and freight, yard movements and facilities, terminal and station operations, or simply the overall efficient use of plant," the AAR spokesman declared, "it remains an inescapable fact that without proper protection the whole scheme of things would eventually suffer."

## Tariff Group Issues 18th Report

The Railroads' Tariff Research Group has issued its eighteenth progress report, which includes Freight Tariff Improvement Bulletins 99 to 105, inclusive, and supplements to four previously issued bulletins.

The bulletins prescribe tariff specifications approved by the railroads' Administrative Committee and the Cooperating Committee of the National Industrial Traffic League.

Bulletin 99 directs that indexes of commodities give item reference to commodities which apply only in mixed carloads, and that the mixed carload application of such commodities be indicated in the index by "flagging" them with a single dagger reference mark. Bulletin 100 establishes standardization in several areas, including "noibn" for not otherwise indexed by name, "(R35)" for all references to Classification Rule 35, and abbreviations for a number of common terms.

Bulletin 101 directs tariff makers to avoid lengthy and involved expressions in the subject column of narrative items. Bulletin 102 prohibits making commodity descriptions in tariffs subject to the classification for packing specifications when the tariff descriptions differ from descriptions in the classification.

Bulletin 103 names and describes abbreviations which must be explained, meanwhile directing that tariffs

omit explanations of commonly understood abbreviations. Bulletin 104 gives instructions with reference to publishing extensions in transit time limits. Bulletin 105 extends cumulative indexes of items in supplements to the explanations of route numbers and to unitemized matter—innovations which are expected to facilitate checking of supplements.

First of the supplements to previously issued bulletins is Supplement 1 to Bulletin 18. This bulletin now requires that all tariff supplements of more than eight pages contain a cumulative index of new or changed items. Supplement 1 directs that a reference to the latest list of new or changed items be included in supplements which have less than eight pages and thus do not contain their own cumulative indexes.

Supplement 2 to Bulletin 43 rescinds provisions of the original bulletin which have required tariff makers to drop, after an initial publication, reference to an ICC order—if rates involved are published as direct result of such order. The requirement was dropped because it "produced complications."

Supplement 2 to Bulletin 74 prescribes a new general rule for rate and exception tariffs. Supplement 1 to Bulletin 95 requires that the state or portion of Mexico that is included in the application of a tariff be indicated on the title page.



Containers Save Time

This summer the Southern Pacific plans to handle its tour-party baggage with cargo containers of the type shown here. Tour baggage often travels apart from its owners, and cargo containers will eliminate handling individual pieces. SP believes the baggage will ride better in cargo containers and save loading and unloading time.

powers of recuperation, or draws so lightly upon reserves of materials and manpower."

**The defense planning guide** is an illustrated pamphlet of 24 pages. As it says, it does not undertake to cover the whole field of railroad operation and protection. It is an attempt "to deal only with those particular factors and problems of railroad maintenance, operations, and protection which might be expected to result from enemy action."

It contains a letter of endorsement from Interstate Commerce Commissioner Owen Clarke, who is in charge of the commission's Transport Mobilization Staff. The letter was addressed to President W. T. Faricy of the AAR and President J. M. Hood of the Short Line Association. Mr. Clarke said the guide conforms with basic principles of facilities protection recommended by government agencies concerned with mobilization planning.

He also expressed his hope that the guide would be distributed to all interested railroaders and public officials. "The railroads," Commissioner Clarke added, "are to be commended for this timely move."

## AAR Publishes Van Fleet Tribute

Strong railroads are vital in wartime and they "can be neglected only at grave peril to our national security and survival," according to General James A. Van Fleet, former commander of the Eighth Army in Korea.

He made this statement in a book entitled "Rail Transport and the Winning of Wars," published by the Association of American Railroads. The AAR also has published and distributed, as has the American Short Line Railroad Association, a pamphlet entitled "Railroad Planning for Defense—A Guide."

The Van Fleet book consists of 71 pages, paper bound and illustrated. In it the general declares that "in any future national defense emergency, as in all past military efforts

since the railroads came into being, we shall without doubt have imperative need for the quantity and type of transport which only railroads can supply." Thus, the general added, "we have now and always will have vital need for strong, vigorous, progressive railroads, with reserves of traffic capacity and trained manpower upon which the armed forces can draw for their own combat and strategic requirements."

To maintain a rail plant in such readiness, "it must be used in peacetime," General Van Fleet argued. He also referred to experiences which showed that, "of all forms of transportation none is more difficult to knock out, nor more resistant to enemy attack, than railroads." And no other transport agency "has such

## C&NW Studies Removal Of "Excess Facilities"

All Chicago & North Western sidings and passing tracks are being surveyed with a view to removing excess facilities, Ben W. Heineman, C&NW chairman, told shareholders at the recent annual meeting.

Spiking rumors that the road would abandon large portions of branch line trackage, Mr. Heineman said the siding and passing track program aims at trimming maintenance, as well as providing rail for use at other points.

Mr. Heineman also said studies are being made to determine whether to concentrate all C&NW heavy car repair work in one shop — a shop big enough to include building new cars as well.

He told shareholders that C&NW deferred maintenance, while sub-

stantial, is "somewhat less" than formerly indicated. He went on to say that "this railroad requires rebuilding" and that savings made in one area are going to have to be put back into the property at other

places. Mr. Heineman, in response to a stockholder question, said he has "no knowledge" of any move to merge the North Western with the Denver & Rio Grande Western, or "any other railroad."

## ICC Honors Colonel Johnson

The retirement of Colonel J. Monroe Johnson from membership on the Interstate Commerce Commission was marked by ceremonies at which the commission paid him special tribute.

The ceremonies on June 4 also included administration of the oath of office to Colonel Johnson's successor — Commissioner Donald P. McPherson, Jr. Justice Felix Frankfurter of the United States Supreme Court administered the oath to Mr. McPherson.

Several hundred persons, including government officials and officers of transportation agencies attended the ceremonies, at which ICC Chairman Anthony F. Arpaia presided. The chairman, and each of the commission's other members, paid individual tributes to Colonel Johnson, and the chairman presented him with a scroll on behalf of the commission. Colonel Johnson's brother commissioners also presented him with the chair he used during his service on (Continued on page 16)

## 120-mph Train Designed to Ride on Flangeless Rubber Tires

The long-accepted basic foundation for train operation—a flanged wheel on steel rail—is eliminated in a radical new train design being tested in Argentina.

The new train, designed for a minimum speed of 120 mph, is intended for operation on rails built a yard or so above the ground on prefabricated concrete pillars.

A system of "absolute guidance" replaces the wheel flange, the friction of which is considered mechanically undesirable at low speeds, and a serious impediment at high speeds. "Ab-

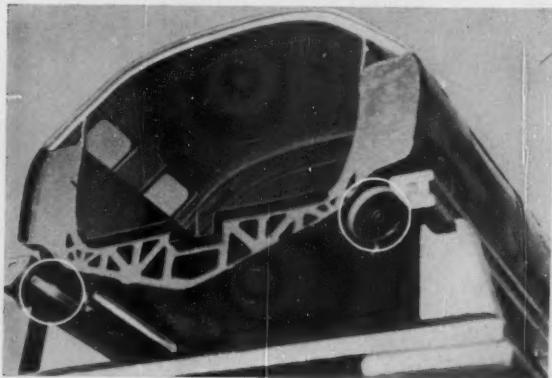
solute guidance" is attained by small wheels which contact the underside of the rails on which the supporting wheels ride. This arrangement is said to make it impossible for the vehicle to leave the rails even at the highest speeds.

Because in this design weight plays no role in stabilizing the cars, the units can be made extremely light—just over 200 lb per seat. For each five articulated units (total 40 seats), there will be an entrance and a lavatory. Center of gravity will be below the center of the wheels (which

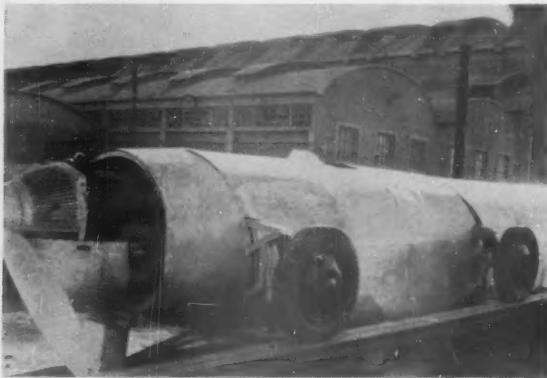
the axle would go through if there was one).

Locomotive weight can similarly be made very low, because of the propeller drive. The light weight of locomotive and cars, plus the absence of traction or high-speed braking loads, permits use of pneumatic tires.

Protection against blowouts or other emergencies in the running gear is provided by small auxiliary rollers. High-speed braking is effected by reversing the prop blades, low speed braking (below 15 mph), by an auxiliary system.



Need for flange on wheels of new train design being tested in Argentina is eliminated by small rollers (circled in photograph at left), which ride underside of guide rails. The car rides on pneumatic tires like those under automobiles, but somewhat larger. Each coach, designed to



Photographs courtesy of Railway Gazette, London, Eng.  
seat eight persons, weighs under 1,700 lb and is only about 6½ ft long and 10½ ft wide. Propeller (photograph at right), is driven by radial engine which develops 2,400 hp at 2,600 rpm. At normal cruising speed, each of two engines will develop 1,000 hp at 1,800 rpm.

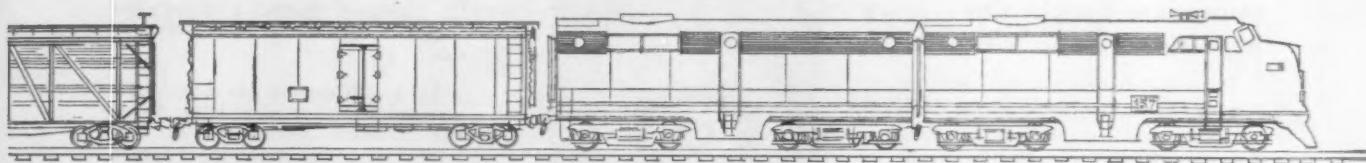


Buy Griffin EQS

# FOR LONGER FLANGE AND TREAD WEAR!

The Griffin grain structure on tread and flange is at right angles to the rail—giving you a longer-lasting wheel.

Because of advanced casting methods . . . pressure pouring in machined graphite molds . . . the roundness of the Griffin EQS is practically perfect as cast. Absolutely no tread machining is necessary. The toughest metal *stays* where it reduces your costs . . . at the point of contact with the rail!



# GRIFFIN EQS

ELECTRIC QUALITY STEEL

Griffin Wheel Company

445 N. Sacramento Blvd., Chicago 12

Plants strategically located to serve all railroads



Give the "green" to **GRIFFIN** and watch your costs go down!

(Continued from page 13)  
the Interstate Commerce Commission.

Just before the ceremony, the commission announced that the colonel had been admitted to practice before it. The same announcement said the commission had also conferred the status of practitioner on E. F. Hamm, Jr., publisher of *Traffic World*, who recently completed several months of service as the commission's acting managing director.

### Santa Fe Sends "Middle Management" to School

For the fifth consecutive year the Santa Fe will send 31 of its "middle management" men through an intensive six-week seminar known as the Institute of Business Economics and offered by the University of Southern California in Los Angeles.

The course focuses attention on major problems confronting the U.S. and the steps to be taken in preserving the American way of life. It was begun in 1952 as a joint venture of the railroad and the university's school of commerce.

"The institute reflects Santa Fe management's conviction that familiarity with economic history and with basic economic principles is essential to an understanding of current economic problems and to an intelligent appreciation of alternative courses presented in domestic and foreign affairs," Santa Fe president Fred G. Gurley, says.

### Milwaukee Freight-Car Reporting Tied in with UP

Train and freight car information is to be exchanged between the Milwaukee and the Union Pacific, Southern Pacific and Pacific Fruit Express at Council Bluffs, Iowa.

The Milwaukee's present car reporting system, between Bensenville, Ill. (Chicago), Milwaukee, Wis., and Savanna, Ill., is to be extended to Council Bluffs, where the Milwaukee interchanges with the UP. Complete information on eastbound cars for the Milwaukee will be reported to it by the UP, SP and PFE when the cars leave west coast cities. Similarly, westbound cars leaving Milwaukee or Chicago for the coast will be reported to the UP and SP.

Information to be exchanged will include car initial and number, con-

tents, origin, consignee, destination and complete routing. Information is sent via Teletype on special circuits. Additional business machines (punch cards) and Teletype will be installed in the St. Paul, Minn., yard this fall to tie in that point with the rest of the system.

### Hydra-Cushion Reduces 10 mph Shock to 4 mph

Possibility of easing a 10-mph coupling shock to the equivalent of a 4-mph impact is demonstrated by a car bearing a pilot model of the Southern Pacific's hydra-cushion underframe, which has been undergoing SP road tests for a year (Railway Age, May 9, 1955, p. 30).

The SP has announced it plans to go ahead with a program to build several box cars with the hydra-cushion underframe, which was developed by the Stanford Research Institute under the SP's sponsorship. The hydraulic principle eases coup-

pling shock by allowing for controlled release of some of the oil compressed in the underframe's hydraulic cylinder by the coupling action.

### Court Refuses to Stay Ban on Slow Railroading

A three-judge court sitting in the federal district court for Oregon has dismissed the suit brought by lumber shippers to enjoin enforcement of the Interstate Commerce Commission's Service Order 910.

The order, which prohibits railroads from wilfully delaying movements of loaded freight cars, had been stayed since April 9, its original effective date, by a temporary restraining order issued by the court (Railway Age Apr. 23, p. 8). The court's action dismissing the suit also dissolved the restraining order.

ICC action to reinstate the order was expected as this issue went to press.

### Supply Trade

**Max K. Ruppert**, president of P. & M. Co., has been elected president of Poor & Co. He succeeds **Eugene C. Bauer**, elected chairman of the board to succeed **V. C. Armstrong**, retired. For the time being Mr. Ruppert will continue as president of P. & M. Co., a subsidiary of

**Walter G. Roth**, district sales manager, Western Railroad Supply Company, has been elected vice-president, and **John Hensel**, district sales manager, has been appointed general sales manager. **W. E. Glasby** has joined the company as advertising manager.

**Jack E. Fathauer** has been appointed manager, railway division, for the Cleveland district office of National Malleable & Steel Castings Co.

**L. J. O'Connell** has been made manager, transportation sales, Graybar Electric Company, at New York. He was formerly manager, communications sales, at Omaha.

**Robert H. Morse, III**, sales manager, Fairbanks, Morse & Co., has been elected vice-president - sales, and **J. F. Weiffenbach**, chief product engineer, has been elected director of engineering.

**Lamson Corporation** has appointed **Paul P. Suiter** railroad representative for its pneumatic tube systems, with office in Chicago.

**Randall W. Johnson** has been named assistant manager, transportation sales department, **Trane Company**, in charge of transportation air conditioning and refrigeration equipment. (Continued on page 48)



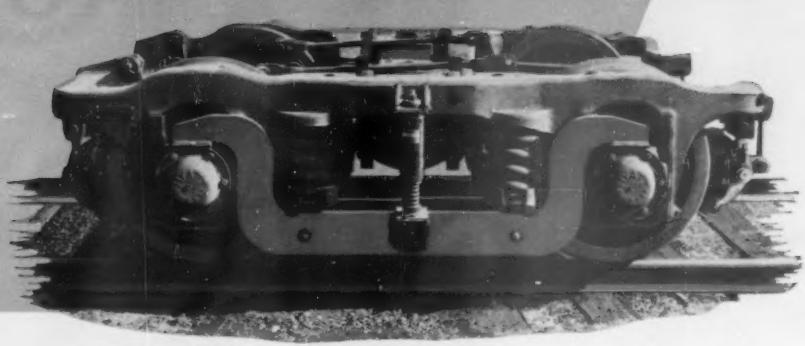
Max K. Ruppert

Poor & Co. He was born on June 5, 1899, at Grand Rapids, Mich., and is a graduate of New Mexico Military Institute. He began his career in 1920 as a chairman on the Rock Island. He has been with the P. & M. Co. since 1922. He was elected president in 1943.



Cars built by General American Transportation Corporation

Commonwealth BX Truck



# Here's Progress!

**500 New Refrigerator-Express Cars  
for RAILWAY EXPRESS AGENCY  
Equipped with Commonwealth BX Type Trucks**

Because of many years of outstanding performance of Commonwealth Trucks on cars of the Railway Express Agency and railroads throughout the country, this new lot is equipped with latest design Commonwealth BX Type Trucks. When not transporting perishables from the west coast and the south, these cars are used for LCL express shipments and bulk mail handling in fast train schedules.

Equalizers, swing bolsters, coil springs and friction snubbers combine to provide smooth,

safe riding of light or loaded cars, protecting car contents, thereby minimizing damage claims. The rigid one-piece cast steel truck frames with integral cross transoms and pedestals insure axles being in tram at all times.

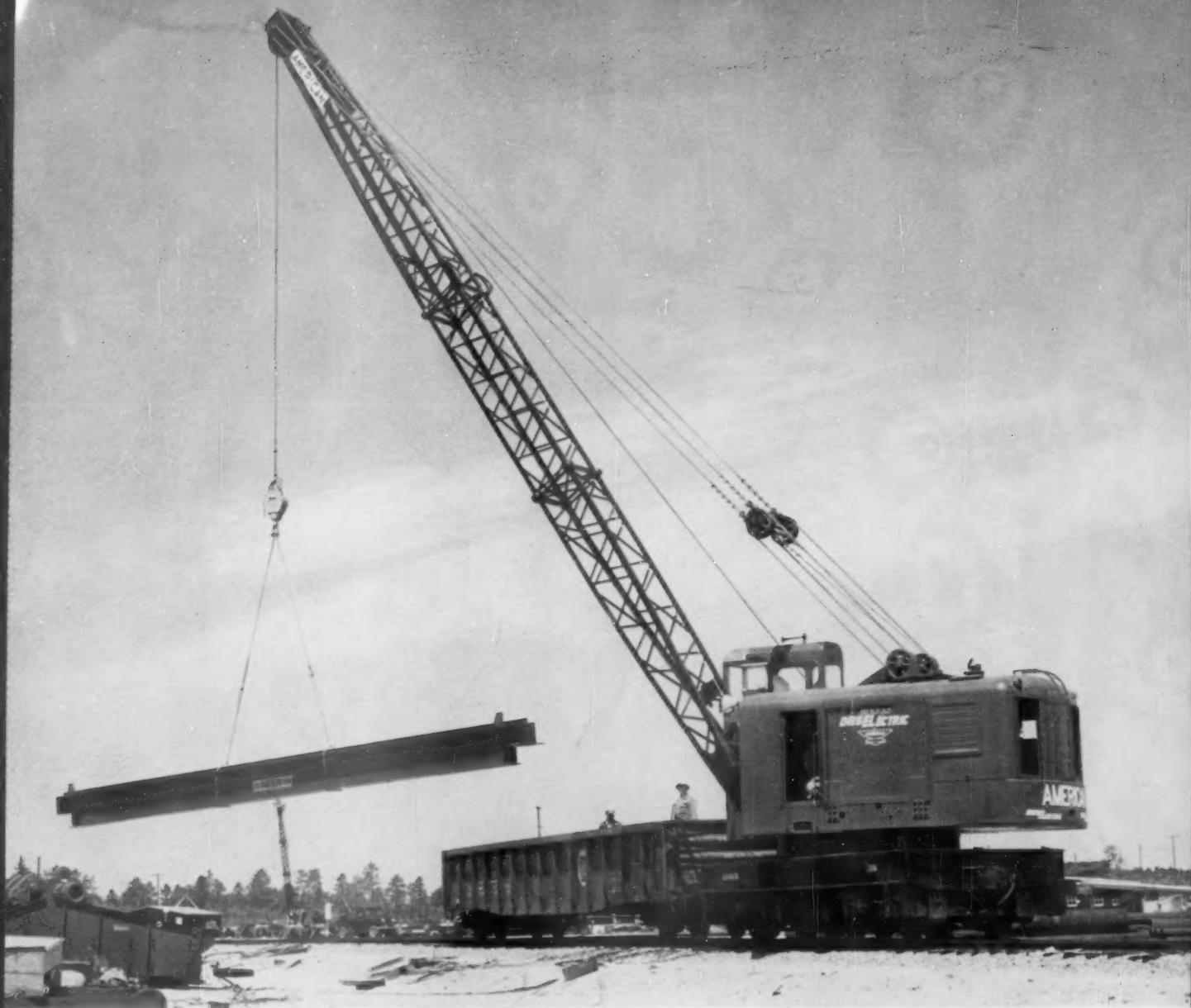
Commonwealth BX Trucks are approved for all types of Express-Refrigerator, Box-Express and Merchandise cars operating in all classes of passenger trains. For dependability and true economy be sure to specify Commonwealth Trucks.



## GENERAL STEEL CASTINGS

GRANITE CITY, ILL.

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## RECORDS PROVE CRANE EFFICIENCY

Cost-conscious railroads are discovering and profiting from the amazing efficiency and workability of American DiesELectric\* Locomotive Cranes. Operating records prove that the big Americans do more work per day and do it at remarkably lower average cost! On-track assignments ranging from pile driving and steel handling through general maintenance-of-way jobs have demonstrated the DiesELectric's versatility! Its dependability on emergency jobs has been tested on landslides and washouts.

American DiesELectrics, like the 40-ton model above, are designed around the modern diesel-electric powertrain; smooth electrically powered trucks—efficient diesel power for the crane. It's a patented American feature that eliminates more than 50 wearing parts—cuts maintenance costs as much as 50%! Another production

boosting feature on all DiesELectrics are air controls that accurately spot loads of any size with only finger-tip pressure!

You can learn all the reasons why American DiesELectric Locomotive Cranes in 25 to 80-ton capacities are the leading choice of major rail lines by writing:

**AMERICAN HOIST  
and Derrick Company**

St. Paul 1, Minnesota

\*Registered Trademark. DiesEl-electric Locomotive Crane U.S. Patent No. 2083460, Canadian Patent No. 358226 and Touch Control U.S. Patent No. 2370859 granted to American Hoist and Derrick Co.



# Good stops start here...

with a **WESTINGHOUSE**  
**3CD COMPRESSOR**

When you consider all the uses for air on a modern train, no single air device is more important than the air compressor.

The Westinghouse Air Brake 3CD compressor, shown here, is unsurpassed for reliability. Millions of hours of operation have proved it to be a most dependable compressor for railroad use.

**Westinghouse Air Brake  
COMPANY**

AIR BRAKE DIVISION  WILMERDING, PA.



*On the A.R.T.*  
**THEY WHET YOUR APPETITE**

At any fruit or vegetable counter, the biggest sales-builder of all is the "just-picked" look. That's why the A. R. T. Company has done such a topflight job of providing cars that ride smoothly at higher speeds . . . to bring produce from the orchards and farms to your dinner table safely and quickly.

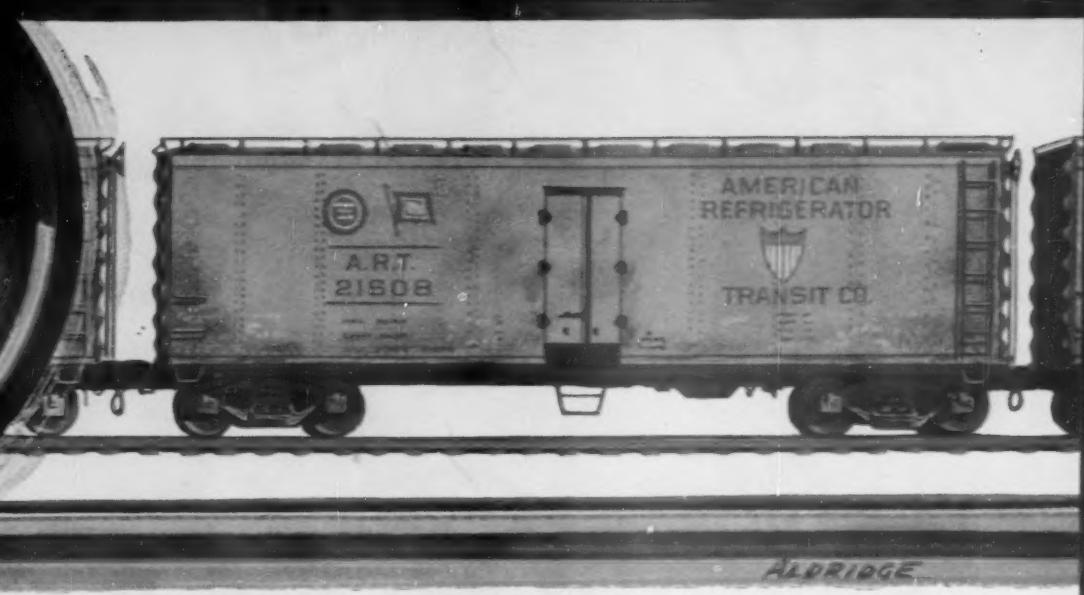
Is this good service possible only with new cars? Not at all. Older cars—with trucks dating back to the pre-Ride-Control era—are simply brought up to modern riding standards with ASF Ride-Control Packages. Change-over takes only a few minutes

and the investment is small—practically nothing, in fact, compared with the way *improved service* retains and *regains* freight revenues.

Safe, prompt arrival of *any* commodity carried on the rails is just as important and desirable as a fresh-looking orange! Further tests on your road will prove how Packages can help you increase *profits* . . . through greater car utilization, better service, fewer damage claims.

Now is the time to make smooth riding another objective of your general repairs program!

0000 LBS.  
T. 80400 LBS.  
WT. 55600 LBS. BA-6



## WITH SMOOTH-RIDING CARS!

NOW . . . all ASF Ride-Control Packages are fitted with Extended Life Springs. In appearance, these springs look like any standard truck spring . . . but tests prove they average at least 10 times longer life! Ride-Control Packages offer you a quick answer to smoother riding—and an answer to costly spring failures and replacement.

Bring your older cars  
up to modern  
riding standards  
... with

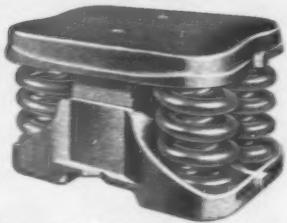


Ride-Control Packages

AMERICAN STEEL FOUNDRIES

Prudential Plaza, Chicago 1, Illinois

Canadian Sales: International Equipment Co., Ltd., Montreal 1, Quebec



"horse and buggy" leadership in an atomic age

by Hungerford



We will be glad to send you enlarged copies of this Hungerford cartoon (without advertising copy) for posting on your office and shop bulletin boards, or a cut for your company magazine, at cost.

# Edgewater

## Rolled Steel Wheels



Freight Cars



Passenger Cars



Diesel Locomotives



Edgewater Steel Company

PITTSBURGH 30, PA.



\* New KEM KOLD BILD being applied on new cars at Berwick, Pa., plant of A C F Industries, one of several leading car builders using this new one-coat spray material.

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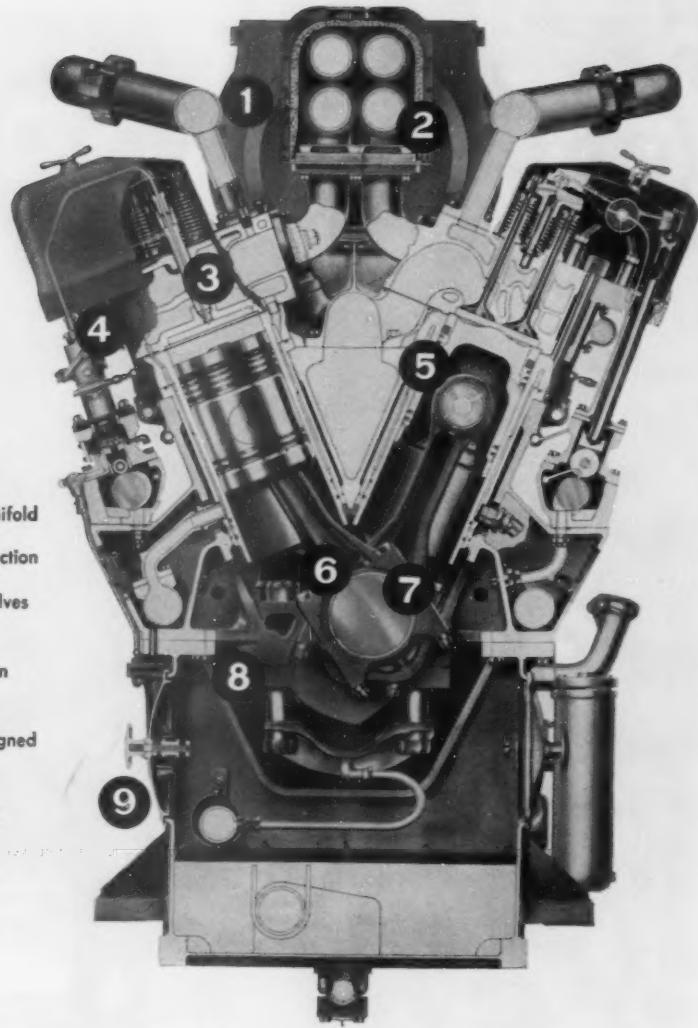
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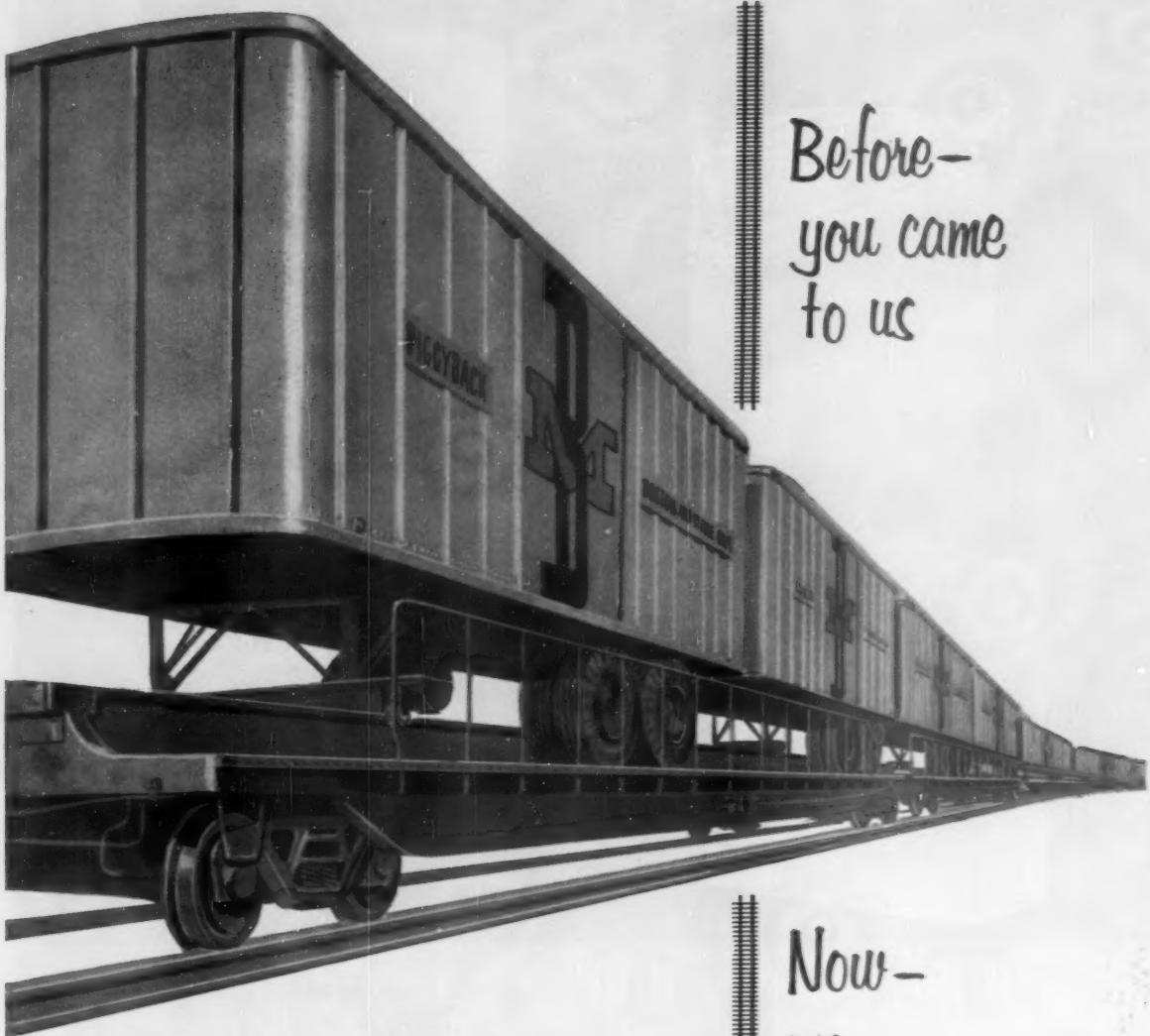
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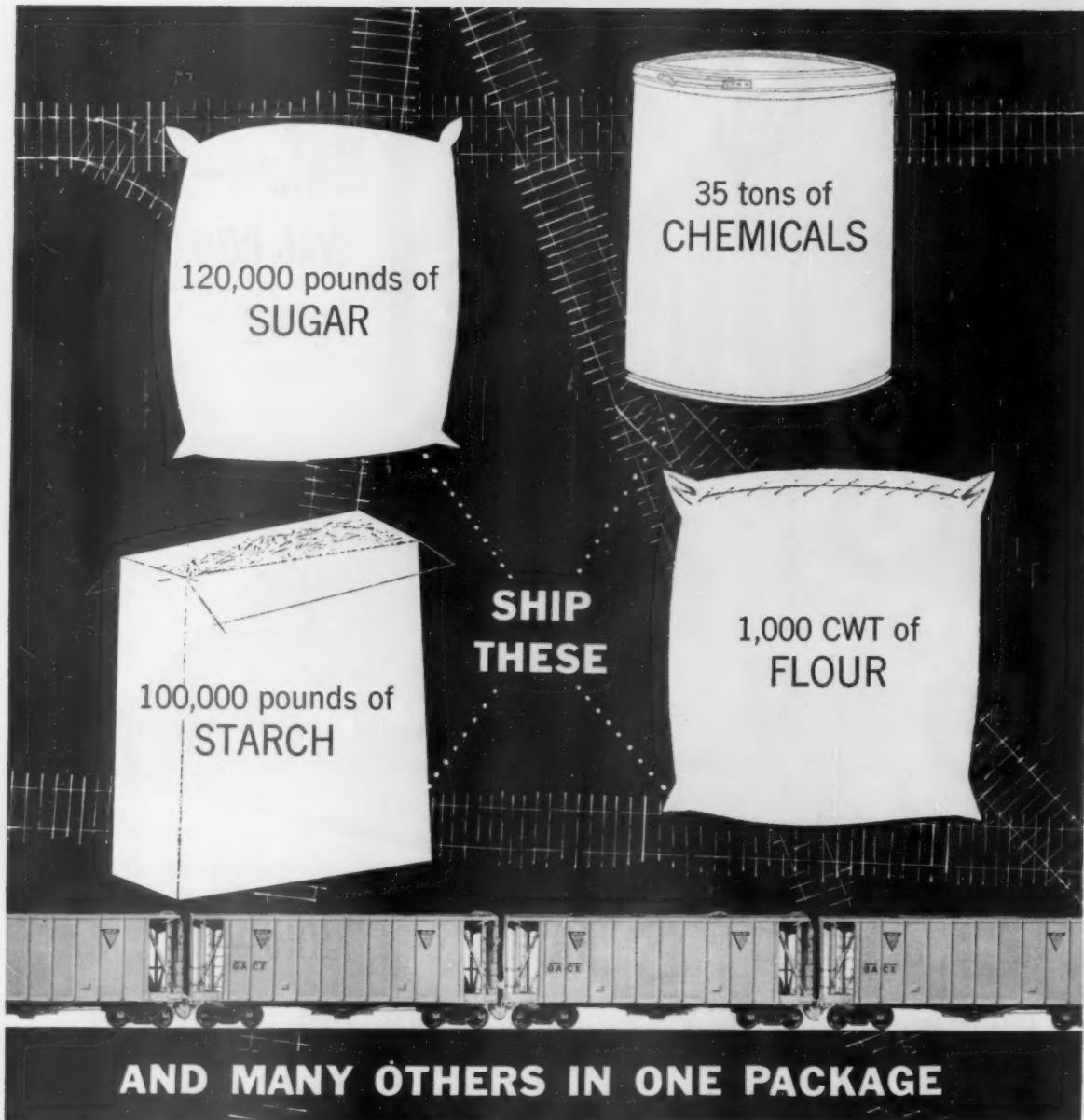
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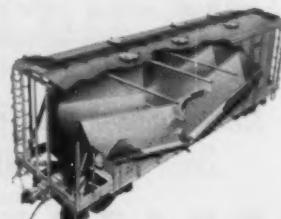
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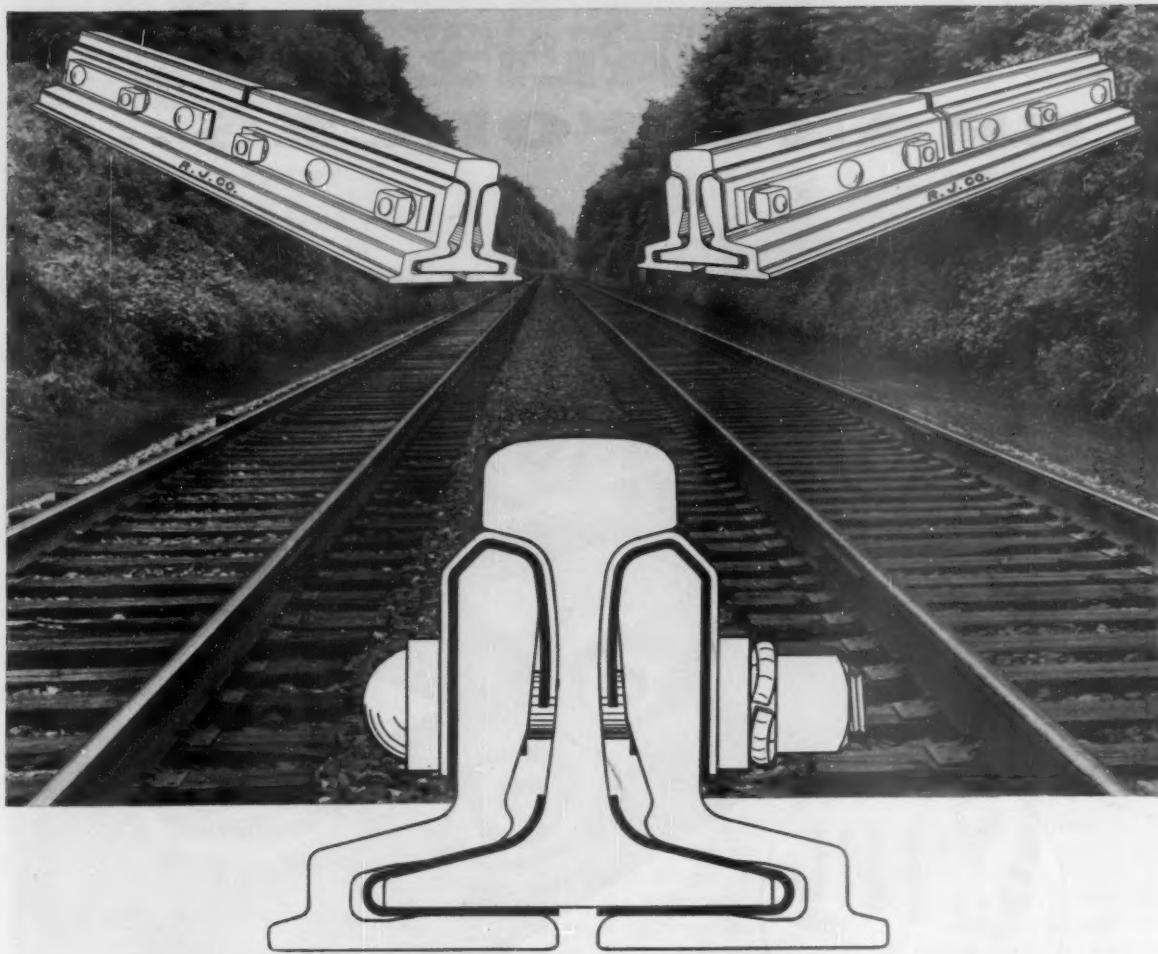
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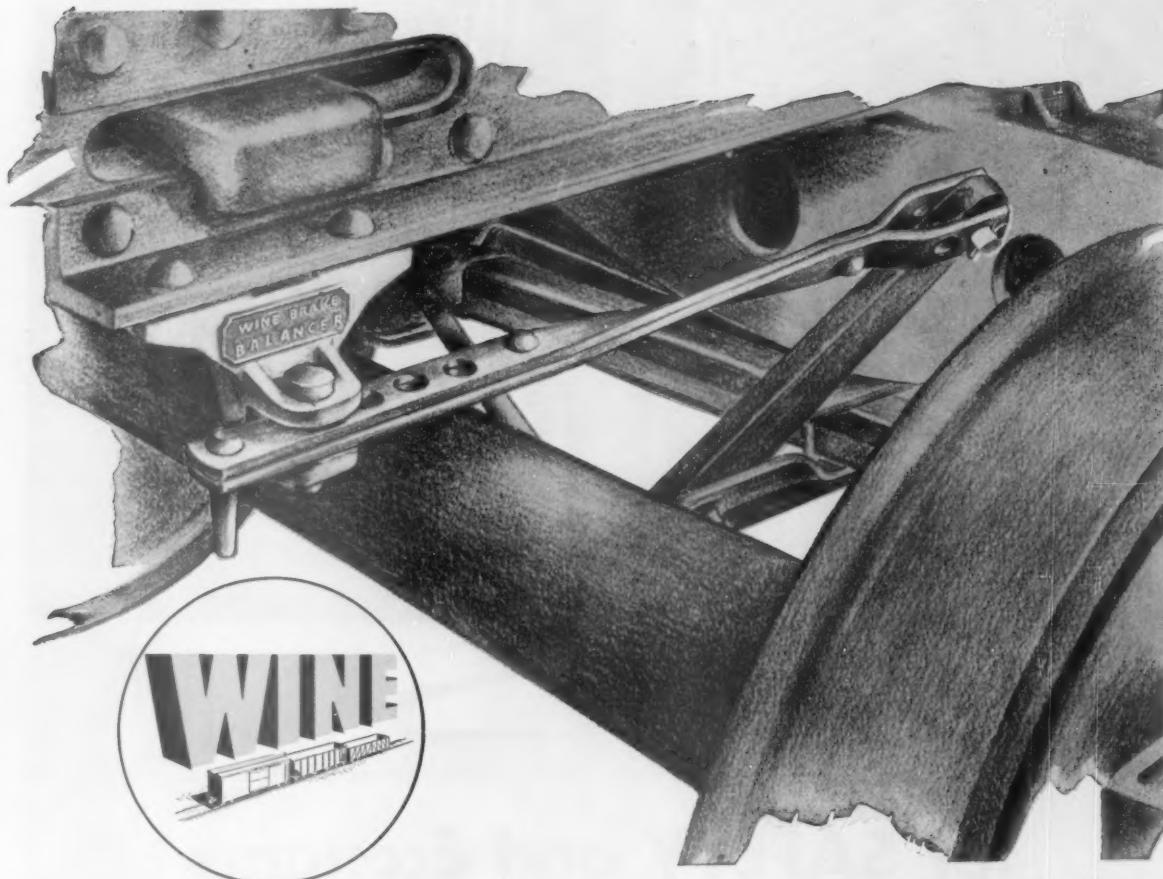
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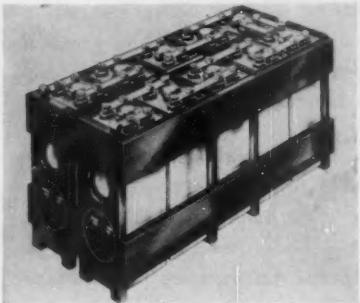
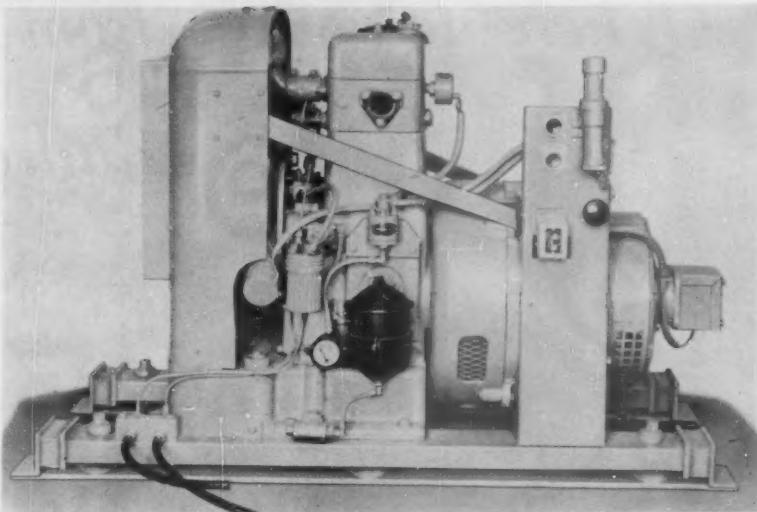
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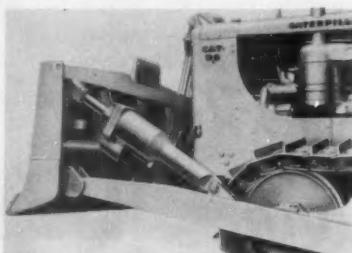
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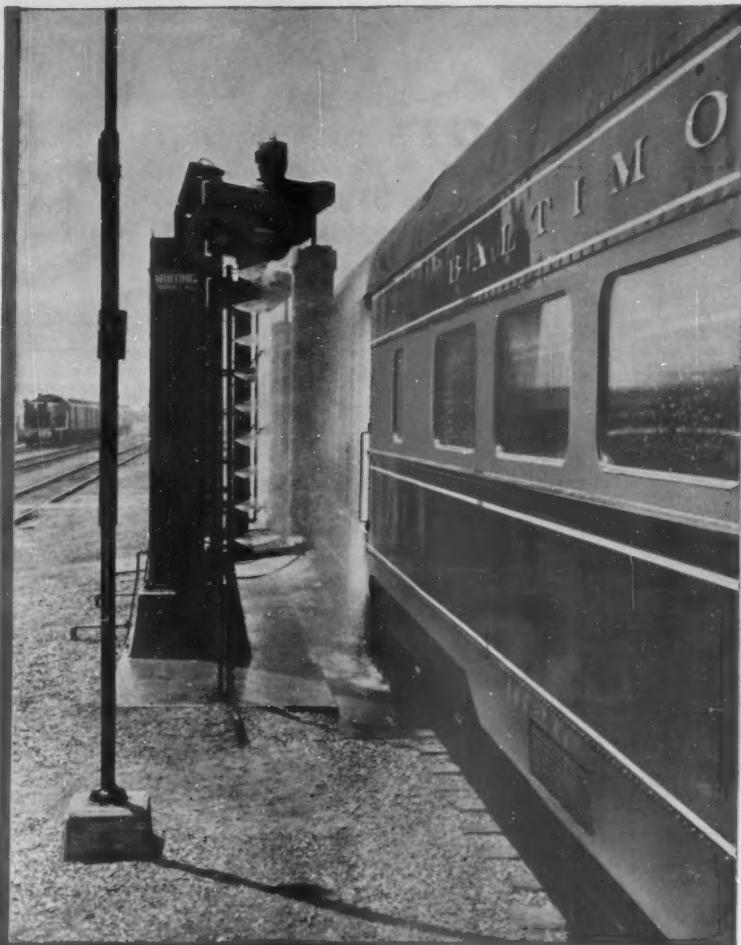
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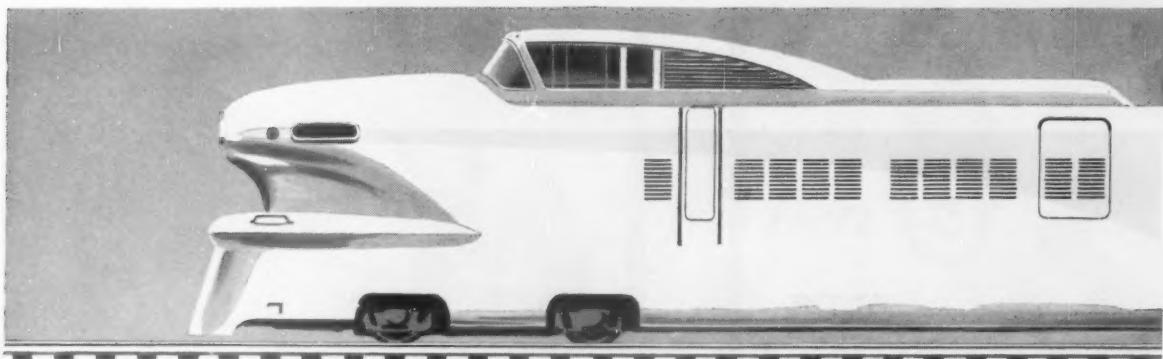
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## Let's Trim Down the "Internal Subsidies"

No other large industry is as innocent of reliance on taxpayers' support as the railroads. Most manufacturing industries get tariff protection—which has the same effect as a direct subsidy. The oil and steel companies and other producers of bulk commodities make heavy use of the toll-free inland waterways which the taxpayers provide.

**Almost alone among modern industries, the railroads strictly observe the dictum: The people should support the government, and not the government the people. And yet—from the standpoint of economics, though not from that of the strict dictionary definition of "subsidy"—there are plenty of subsidies in and around the railroads. They are not governmental subsidies, but the kind known as "internal subsidies."**

A service is provided for a patron at less than cost. Who makes up the difference between the cost of the service and what the patron pays for it? Not the taxpayer—as is the case with the subsidies enjoyed by the barge operators and/or their patrons. Instead, on the railroads, it is the other railroad patrons and railroad security owners who pay the cost of the "internal subsidies."

When the subject of internal subsidies is mentioned, most people think immediately of passenger service as an outstanding example of this type of subsidy—but such a broad generalization is far from accurate. Some passenger trains pay their way. The passengers who ride such trains are not being subsidized. Instead, to the extent that such trains earn more than it costs to operate them, the passengers on these profitable trains are contributing to "internal subsidies"—not receiving them.

### Averages Are Misleading

There are shippers of some commodities who take pleasure in pointing out that their product pays *on the average*  $x$  per cent (usually a generous ratio) of "fully allocated costs." These shippers consider, therefore, that their traffic is subsidizing the passenger service and all other freight traffic which yields a lower average ratio of "fully allocated costs" than theirs does.

This contention is erroneous. It could very well be that there are a comparatively few large shippers—who ship and receive the commodity in question in trainload lots—who account for the *average* profitability to the railroad of this particular commodity. It could

just as well be that the majority of the shippers of this commodity—who do business in single carloads and, hence, give rise to disproportionate switching and terminal expense—are actually "deficit shippers." The fact that a commodity *on the average* seems to be definitely profitable, does not preclude the possibility that a large proportion of the individual shippers or receivers of that commodity may be getting far more than their money's worth. It is by putting too much reliance on averages and not giving enough attention to the costs of individual movements that "internal subsidies" arise.

### Avoiding Deficit Patronage

The worst thing about "internal subsidies" is that no other agency of transportation except the railroads has them. The truck people and the barge people have a way of selecting their traffic, so that they do not handle *any* tonnage that doesn't, at least, cover its costs. On the other hand, they are constantly on the lookout for specific movements by rail—which are paying relatively high rates in ratio to their actual cost of movement. Such movements are the "cream" which these selective competitors proceed to skim.

Most economists are suspicious of subsidies of any kind. However, they concede that subsidies may sometimes be necessary—for instance, in the continued operation of a branch line which carries little traffic in times of peace but which would be strategically important in war. But these economists would also insist that such subsidies as are unavoidable should be paid for by the community as a whole, and not just by that part of the community which happens to ship by rail.

The practical disadvantages of internal subsidies are even more compelling than the theoretical economic arguments against them. The principal practical disadvantage is this—

You can pay out the internal subsidies all right—but you find it pretty hard nowadays to collect the costs of such subsidies from your other shippers, because all the traffic you have that has a substantial profit margin in it becomes easy pickings for competing agencies of transportation.

Thus it is that internal subsidies are both wrong in principle and harmful in practice. The practical objection to them did not exist, of course, so long as the railroads had a virtual monopoly of inland transportation—because, then, the cost of internal subsidies was relatively easy to collect from other patrons.

**It probably will never be possible to get rid of internal subsidies entirely—but, by persistent effort in developing cost data on specific movements, their number could doubtless be greatly reduced. The way to remove these subsidies is usually not by increasing the average charges on this or that commodity—but rather by increasing the charges or reducing the costs of particular movements which are disproportionately expensive.**

# Economy Fuel

## { What Railroads Know About It { What They Can Learn About It

By G. J. WEIHOFEN  
Associate Editor

Although the diesel locomotive moves a given number of ton-miles for substantially less fuel cost than steam power did, fuel continues to be the largest single item of locomotive expense. Last year the fuel bill was in the neighborhood of \$421 million—roughly 1/7 of the cost of all materials used by the railroads.

How to reduce this large expense has long been a subject of substantial interest but only in the past few years has much progress been made toward accomplishing a net reduction. This is the aim of experimental programs which have been set up to explore the broad question of whether lower grade fuels can reduce the fuel bill more than they increase maintenance and operating costs.

Agreement is not unanimous that there will be a long-term gain for the railroads in exploring economy fuel—even among those who feel that they are saving money with it now. Dissenters feel that products of the oil industry are priced strictly according to the law of supply and demand, and that cost cannot very well be segregated or be an important factor in determining the price of different products of crude. They feel that an increase in demand by the railroads for so-called economy grade fuels will raise their prices very close to that of premium fuel. Others feel that the railroads have no choice—that price differentials will dictate that they use lower and lower grades of fuel and that they will simply have to find ways to live with it.

This living with economy fuels is not always easy. While tests generally have indicated savings, this is not always the case. One road found that maintenance cost went up nearly \$15 for every dollar saved in buying a fuel that cost 1½ cents less per gallon. Another line using a mixture of fairly high quality economy fuels had an epidemic of stuck

Where "economy" fuels might be beneficial to railroads and where their use can be detrimental is the broad general subject of this article, which abstracts the content and interprets the major conclusions of a more comprehensive study in the May and June issues of *Railway Locomotives and Cars*.

Material for the study was obtained from (1) interviews with test engineers, mechanical engineers and mechanical operating officers of over a dozen representative railroads; (2) oil company and other spokesmen in a position to speak with authority on one or more phases of the overall fuel situation; and (3) pertinent published material, such as reports of technical societies and test results of railroads and other companies.

The study covers both individual experiences of different roads with a wide variety of economy fuels and a summation of opinion on such matters as stability, mixing, the value of additives, effect on lubricating oil requirements, desirability of modifying engine timing, possibilities of the dual fuel engine, and why premium fuel is still the better buy in many cases.

injectors. A third found that power assembly parts renewal was 8 to 10 times normal when using a medium quality economy fuel.

Inconsistency is a trade-mark of economy-type fuels. Two batches are seldom alike, and even where quite similar, may or may not be compatible. One may be a good deal more stable in storage than the other. On the other hand, within a given specification, one batch of high-grade straight run distillate will be as stable as the next, universally compatible, and have the same effect on operation and maintenance regardless of where or when it is bought.

Recognizing the differences between straight run and the predominating ("cat cracked") type of economy fuel, some but not most lines have changed the timing of their engines in going to cat cracked fuels. Many adjust the racks to deliver less fuel to compensate for the increase (about 3%) in heat content of most economy fuels.

One line that conducted a major study of the characteristics of cat cracked fuel and its effect on EMD

engine settings achieved an aggregate fuel saving from 8 to 12% and an overall engine performance which was considered equal or superior to that with the original settings and premium fuel.

### Three Common Characteristics

While economy fuels tend to vary widely when all characteristics are considered, all types seem to have three things in common—although to varying degrees. Stability is low, they foul injectors, and they clog filters.

This is true even of cat cracked fuels that correspond to or approach premium fuel in such characteristics as cetane number, sulphur content, viscosity and pour point. Nearly all railroads consider stability the most critical characteristic with economy fuels. The service to which the diesel is assigned rates second on the critical list (the harder a unit works, the lower the grade of fuel it can tolerate).

There does not seem to be much reason to expect any improvement in the quality-price relationship of cat

cracked fuel. Any improvements made in it will increase its desirability for other than railroad uses and hence increase the price it can command.

Like the relationship between quality and price, there seems also to be a connection, although not as direct, between quality desired and geographical location. Roads favorably located with respect to refineries, especially small refineries, tend to stick to high quality fuels. Premium fuels are often available for little or no more than economy fuels. A good share of fuel on some lines is high grade (50 cetane or higher), bought at distress prices from refineries with storage facilities temporarily loaded.

There appears also to be a tendency for lines operating in severe climates to be more particular, with experimentation largely confined to locomotives on the shorter runs. Lines that use mostly premium fuel in territories where neither of these factors is important do so mainly because they estimate the price differential to justify economy fuel to be 1½ to 2 cents a gallon (or about twice what it is normally).

#### **How Far to Go in Mixing Fuels**

A wide and often conflicting variety of opinions exist on whether economy fuels can be mixed. Some people feel that even those types of low grade fuel that are stable individually may give trouble if mixed. One group of roads buy economy fuel in quantities that will be used within a few weeks—but premium fuel where long storage will be necessary (quite often stocking up on batches that can be had at bargain prices).

One line that uses several types and grades of economy fuel keeps the fuels segregated in storage but does not hesitate to mix different ones on the locomotive (as fuel is taken at different points along the line). The feeling is that the constant vibration of the locomotive keeps the different fuels thoroughly mixed and that the relatively short time the fuels are together from delivery to burning will not cause any serious difficulties.

Interestingly enough the feeling on a couple of other lines is that the principal difficulties with economy fuels occur after they are on the locomotive, although not from mixing. The trouble here is on pas-

senger locomotives where the fuel tank is wrapped around the water tank. The latter is kept warm by the steam generator discharge, and it in turn keeps the fuel warm, which accelerates its decomposition.

This problem occurred on two lines. One uses a mixture of equal parts of cat cracked and straight run fuel. The second uses a mixture of the same two types of fuel, but the proportions vary from day to day as all of one type of fuel is supplied at one location while all of the other type is supplied at other locations. The principal difficulty that arose was lacquering of the injector plungers, which apparently resulted when the engine was shut down and deposits from the hot fuel solidified.

Somewhat in contradiction to this finding is the practice on another line which deliberately heats its fuel (a mixture of straight run and cat cracked) by use of a heat exchanger. While the higher temperature admittedly reduces fuel stability somewhat, the reduction is not felt to be enough to cause difficulty in the relatively short time the fuel is aboard the locomotive before it is consumed (and no engine troubles have occurred in 1½ years). The principal problem with this fuel is its incompatibility with any other fuel used by the railroad, including premium. Stability is not a difficulty, as addition of a dispersant is reported to permit the fuel to be stored without difficulty.

A little different twist is given to the storage and compatibility problem by a line which has abandoned completely all fuel specifications (judging each batch on its own merits and buying on the relationship of overall quality to asking price). This road's concern in storing dif-

ferent batches of economy fuel is not compatibility but whether they really mix or whether the top layer of oil in the storage tank might remain on top of future batches and not find its way into diesel locomotive tanks for a couple of years. Because of this possibility, fuel is being put in the top of some tanks.

Still other lines—though definitely a minority—report no storage problems and no engine troubles other than an increase in the need for cleaning and changing fuel filters. In some cases all fuels are mixed indiscriminately both in storage tanks and on the locomotive, whether straight run or cracked, and regardless of supplier.

A factor in mixing different oils is that the mixture will not necessarily have an average of the qualities of the constituents (except for physical content, like sulphur). On one of the tests, for example, a mixture of half 50 cetane fuel and half 35 cetane fuel yielded a 37 cetane blend. Individual pour points were —20 and —35. That of the mixture was —35. Flash points of 166 deg and 182 deg became 178 deg in the mixture.

#### **What Additives Can Do**

Additives can be useful in a number of ways—to increase stability in storage, to lower the pour point, to prevent injector sticking, to increase cetane rating, to reduce smoke production by improving combustion, and to reduce corrosion.

On the other hand, as fuel has limited tolerance for additives, overdoses and mixing can introduce problems more serious than when additives are not used. The principal trouble occurs quite naturally from

#### **WHAT IS "CAT CRACKED" FUEL?**

What the trade calls "cat cracked" fuel is what results when a mixture of straight run distillate and residual fuel is put through a catalytic cracking process. This refinery procedure mixes the two oils and rearranges them chemically. It produces a quality of fuel suitable for diesel use. The quantity pro-

duced is about equal to the sum of the quantities of the residual and straight run oils started with.

There is no precise definition of economy fuel. It may be either cat cracked fuel or a lower grade of straight run distillate. Most of it today is the former.

**"While economy fuels tend to vary widely when all characteristics are considered, all types seem to have three things in common—although to varying degrees. Stability is low, they foul injectors, and they clog filters."**

mixing fuels which do not act favorably with additives with fuels which require additives. Where fuels with additives are mixed, the incompatibility of the fuels is usually the critical factor rather than the incompatibility of the additives.

A problem also arises in cases where an additive might be considered "overeffective," i.e., where it not only prevents formation of new residue but cleans up the residue adhering to the sides of the tank, causing it to go into solution. Some metal-base additives are also thought to cause glowing sparks to be emitted from the stacks.

In the aggregate, however, fuel oil additives are felt to offer substantial benefit if used judiciously. While they do not affect compatibility, they do increase stability in storage by slowing up formation of insoluble residue and breaking up residue already formed. Thus they prevent sludging in storage tanks and plugging filters on the locomotive.

How operating conditions determine what fuel can be tolerated is brought out by one road which has two groups of switchers operating on economy fuels in two different general locations. The first group ran one year without excessive maintenance or other trouble. The second group, running on the same fuel, but in lighter service with more idling time, encountered excessive smoking, sludging, varnish formation on pistons and liners and rings sticking. Power assemblies had to be pulled at three months instead of the usual two years. In some cases this line found that purging the engine with very high grade premium fuel (60 cetane) cleared up some of the troubles.

#### **The Role of the Lubricant**

There does not appear to be uniformity of opinion on what lubricating oil can do to increase the range of fuels that the diesel can burn economically. One series of tests compared premium and economy fuels

when each was used in conjunction with four different types of lubricating oils. Cleanliness of the engines varied considerably, but there was no variation of consequence that could be attributed to the different fuels.

Partially confirming and partially contradicting this test are the results of a road test with three 4-unit freight locomotives. One locomotive operated on economy fuel and heavy duty (detergent) lubricating oil; the second on economy fuel and straight mineral oil with only an oxidation inhibitor added; and the third on premium fuel and straight mineral oil. There was no significant difference in the condition of the engines at the end of a year's service.

These two tests were typical of a group comparing the effects of lubricants and fuel oil, in that some of the findings were alike between the two and some were in opposition. Another test in the group showed that filter life is often reduced when using lower grade fuel—not only the fuel filter but also the lubricating oil filter—because the lubricant tends to oxidize more rapidly.

Looking into the future, the consensus points toward a change in lubricating oil requirements. Oil with higher additive level, or with entirely new and different additives, may counteract many of the detrimental effects of economy fuels. This in turn could lead to a need for revising the fuel system because such lubricants may permit engines to burn fuels that the present supply systems cannot handle.

#### **Dual Fuel Operation**

Again, peering into the future a little bit, there is little doubt that interest in economy fuels will continue to grow, not merely in the amounts sold but in the scope of experimentation with them. Many roads are beginning to feel that too much attention has been paid to specifying the much higher grade oil necessary to avoid fouling up the engine when idling and at light load rather than to the minimum grade

fuel on which the engine will operate satisfactorily at heavy load.

Just how far to go in this direction remains a question. Should specifications be lowered to the minimum grade of fuel on which the engine can idle? Or should they go all the way and take advantage of the diesel's ability to burn very low grade oil under heavy load by changing to a dual fuel system (which uses residual fuel for heavy load operation but switches to premium fuel for idling)?

While several roads are experimenting with dual fuel locomotives, the Southern Pacific's experience is perhaps of the most interest and significance to the industry. It was by far the largest scale test of the dual fuel system, and the overall test also included experimentation with low grade fuel in conventional diesel engines.

#### **What Dual Fuel Saves**

After going to economy fuels of all types, the percentage of freight locomotive operating expense chargeable to fuel has dropped from 54.2% to 42.5%.

The heavy fuel selected for experimentation with the dual fuel system had a viscosity of 300 SSU at 100 deg (about ten times that of regular diesel fuel). The high viscosity was one reason for restricting the residual fuel to heavy duty service. The second reason was the high (2.5%) sulphur content. This required that condensation problems be avoided by using the fuel only at high engine temperatures where the detrimental effects of the sulphur would be at a minimum. Among the major findings of the SP tests are:

1. The high sulphur content did not cause abnormal wear in 6 months' service.
2. The greater heat content per gallon of residual fuels will reduce fuel consumption and increase horsepower output. Therefore, the engine setting should be changed to reduce the output back to the original capacity for which the engine was designed.

3. Cracked fuel should be segregated in storage when possible.

4. Cracked fuel makes higher capacity fuel filters desirable on locomotives and more attention should be paid to their maintenance. Filtration in and out of storage tanks will help relieve the load on the locomotive filter system.

5. Selected dispersive additives can reduce storage and filtration problems with cracked fuel. Certain metallic type additives may, however, cause excessive spark emission, whereas organic or ashless additives do not.

6. Insulation sprayed on the outside surface of the fuel tank is effective in retaining the heat in the fuel.

7. Lubricating oil with higher than normal additive content ap-

pears desirable for engines using cracked fuel. With residual type fuels containing high sulphur, lubricants with high alkaline reserve appear desirable, and more frequent oil drain may be necessary.

8. Alternate use of distillate and residual type fuel in the automatic dual fuel system helps purge the system and reduces the build-up of deposits on the injector spray tips.

#### New Types of Test Needed

The most commonly expressed need to make economy fuels successful is for an accelerated test to determine storage stability of cat cracked and other economy fuels to predict in advance how a given supply will behave. One study indicates that storage from 12 to 13

weeks at 110 deg F causes the same deterioration of fuel as a year of normal storage, but this is not considered sufficiently accelerated. Several other types of tests are employed, but no direct correlations have been determined.

The same comments can be made about compatibility—no test has been found that is generally acceptable to predict the condition of the oil at a future time.

Entirely new test techniques may be needed to get full potential savings from economy fuel programs. Radioactive materials may be the key to accelerated testing of wear rates. Similar advanced procedures may give the needed advance tests for stability, compatibility and the other problems that have arisen with economy fuels.

## Railroading

### After Hours

#### Pettengill Bill Again

In this space a couple of weeks ago, I mentioned the Pettengill Bill of the late thirties—and how that historic campaign against the long-and-short-haul clause was dropped and forgotten when the bill failed of passage.

**Harry See, national legislative representative of the BofRT, comes along with the suggestion that the Pettengill Bill campaign ought to be "written up"—which sounds like a good suggestion. It should be helpful to everybody in railroad legislative or public relations work to know the details of that campaign.**

The story ought to be required reading—not only as an object lesson in how to generate enthusiastic support for solving an essentially complex problem, but also to raise the question why a campaign which came near to success was so wholly abandoned.

That isn't the way the St. Lawrence Seaway crowd acted. They were licked at least a dozen times in congressional voting—but they kept coming back until they won.

A couple of days before Memorial

by  
James G.  
Lyne

Editor,  
Railway  
Age



Day, I went up to Rutland, Vt., to see Gardner Caverly of the Rutland Railway. I went by auto, since the Rutland is very happily (for it) out of the passenger business. Mr. Caverly showed me over the Rutland's streamlined headquarters layout—which looks brand new though parts of it are almost a century old (sand blasting and modern interiors work wonders).

We then drove over to Middlebury, where I had an errand to do for the Federation for Railway Progress—consisting in handing to George W. Wilson, instructor in economics at Middlebury College, an FRP check for \$2,000—this being the first prize in a contest, open exclusively to college teachers, for the best paper on changes needed in transportation regulation, in view of the prevalence of competition.

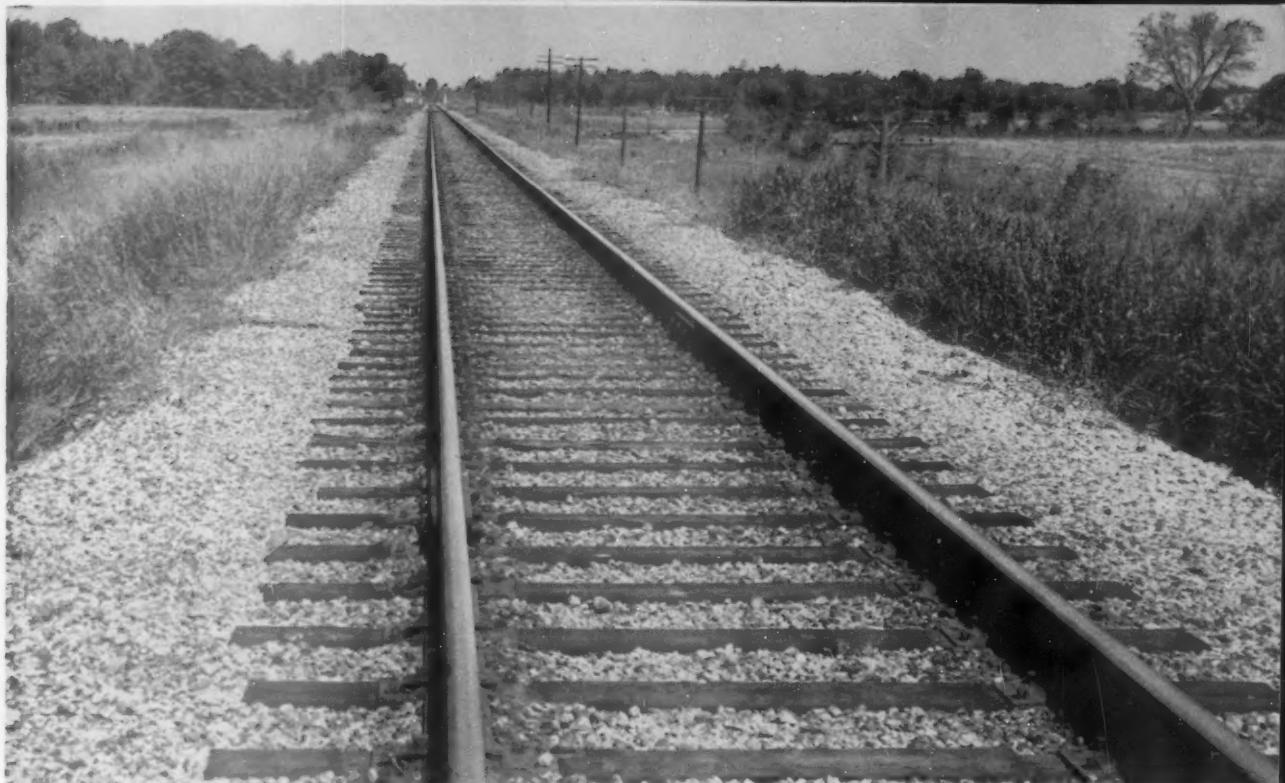
One of the more pleasant experiences that life has to offer is that of giving tangible awards to deserving

people for superior performance in a worthy cause—which was certainly the nature of the errand Mr. Caverly and I performed at Middlebury. President Stratton of Middlebury College and Mrs. Stratton had Mr. and Mrs. Wilson and Mr. Caverly and me to lunch at their home, following the award presentation, after which Mr. C and I got back to our railroading.

#### Constructive Thinking

I'm not at all sure that putting in time and effort to encourage economists to think and write about transportation problems isn't just about as productive a work for the long-run welfare of the railroad industry as anybody can do. Government relations to transportation today offer a pretty good example of economic chaos—with the railroads everywhere getting the short end. When the economists get sufficiently interested in and stirred up about the situation, they will begin to point the way out.

**What public opinion is today about almost any important economic issue is usually what some economists were writing about this particular issue a decade or two ago.**



## "Deep Freeze" for Rail Joints

Research projects by several roads and the AAR-AREA are under way to determine the practicability of tight-rail track construction

**S**o-called tight or "frozen" joints are being given serious consideration on a number of roads as a means of obtaining the same effect as continuous welded rail. The purpose, of course, is to eliminate the extra cost of maintaining the conventional joint. At least three railroads have test installations of tight joints under observation, and a fourth is making a number of such installations this year.

Probably the best known of the test installations is one on the Louisville & Nashville. Attention has been focused on this test partly because it is being observed by the research staff of the Association of American Railroads under the sponsorship of the Track Committee of the American Railway Engineering Association.

It was the subject of an address at a recent meeting of the Maintenance of Way Club of Chicago by G. M. Magee, the AAR's director of engineering research. He said that "in laying rail tight with 'frozen' joints

it was hoped that many of the advantages of continuous welded rail could be obtained without the complication of transporting and laying the long lengths of rail."

Two other roads that have test installations of tight joints are the Lehigh Valley and the Lackawanna. The Chesapeake & Ohio is planning to install test sections this year.

The C&O installations will be in four separate stretches, each about a mile in length. Two will be on the road's Northern Region—one near Benton Harbor, Mich., involving new 115-lb rail, and the other south of Toledo, Ohio, which will consist of new 132-lb rail. The other two installations will be on the Southern Region. The purpose of making the installations at scattered locations is to study the performance of the tight-joint construction under a variety of climatic and other conditions.

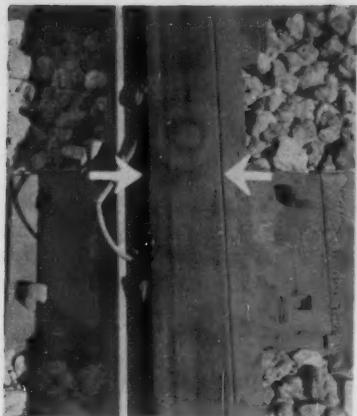
Because the L&N has a considerable mileage of curved track, Mr. Magee explained, the late L. L.

Adams\* was interested in investigating the possibilities of tight rail with frozen joints, and placed a test installation in the single-track main line near Chapel Hill, south of Nashville, Tenn., in November 1953. The rail was 132 lb RE section and the ends were milled in accordance with the manufacturer's regular production practice.

With the rail ends fitting tightly together it was hoped that it would not be necessary to have the ends hardened, and it was further thought that end hardening might later develop difficulties due to uneven rate of wear. Accordingly, the installation was made without the rail ends being hardened or beveled.

This track has an annual density of about 12,000,000 gross tons. It is provided with 6-hole joints. The rail was laid tight at a rail temperature of 65 to 73 deg with 35,000 to 40,000 lb bolt tension. The tight-

\*Mr. Adams was chief engineer of the L&N at the time of his death on May 3.



**PROBLEM:** Find the rail ends. For clue, see arrows. This is a typical joint in L&N's test section of tight rail.

**TEST SECTION** of track with tight or "frozen" joints on the L&N, somewhat less than a mile in length. Shoulder width of ballast section is about 10 in. wider than normal.

rail installation is somewhat less than one mile in length. At each end of the installation eight panels of normally laid rail had every tie anchored with conventional base-type anchors boxed in on each side of the tie. The objective of this was to isolate the tight-rail section and insure that it would not be influenced by the normal track at each end, and conversely that the normal track would not be influenced by the tight-rail installation.

In the tight-rail section itself three types of anchorage were used. For the north 94 rails of the installation, every tie had a rail clip applied on the field side. For the next 66 rails, a rail clip was provided only on alternate ties, also on the field side. For the south 74 rails, rail clips were provided, also on only alternate ties, but placed on the inside of the rail rather than on the field side.

Additional information on the test installation was given in the report of the AREA Track Committee at the convention last March. The rail was placed with a rail crane and the joint bars were applied loosely. When approximately 10 rails had been laid, the rails were bumped on the ends to close the gaps. The middle bolts were wrench tight and the other bolts were tightened to a normal tension. All bolts were then retightened with a power wrench.

## What Is a "Frozen" Joint?

Rail steel, like all metals, expands when the temperature goes up and contracts when it gets colder. To allow for these variations in length the universal practice, in laying standard jointed track, has been to leave short gaps between adjacent rail ends, depending on the temperature of the rail at the time it is laid. The purpose is to allow the rail to expand and contract with variations in temperature.

To facilitate this movement the usual practice is to apply a lubricant to the contact surfaces of the rails and the joint bars. The rails are anchored to prevent longitudinal movement sufficient to disturb the uniformity of the joint gaps.

After laying the rail, the track was smoothed or spot surfaced with a power tamper. Additional slag ballast was then applied to increase the shoulder width to about 10 in. more than normal. Most of the test stretch has two tie-plate lock spikes for hold-down fastenings.

No lubrication was used on the joints, according to the Track Committee report. In assembling the north 40 joints an attempt was made to remove the quenching oil from the joint bars, but with little success. No abrasive was used on these joints. For increasing the slippage resistance of the next 100 joints, thin coats of shellac and powdered aluminum oxide were applied to the contact surfaces of the joint bars. The remainder of the joint bars were placed without surface treatment.

### What Researchers Have Found

The AAR research staff, said Mr. Magee, is conducting observations and test measurements on this installation to develop information that appears to have significance in comparing the performance of rail laid tight with frozen joints and of rail laid in the normal manner. In addition, measurements are being taken periodically of the joint gap openings. The diagrams (on next page) give the results of measurements taken

Because of corrosion and other factors, adjacent rail ends sometimes become "locked" in a fixed position relative to each other. When this happens the joint gap, if any, remains the same regardless of temperature changes, which means that changes in the length of the rails must be absorbed at other joints that are still free to move. This results in excessive joint gaps at some locations, or very high compressive stresses when the "movable" gaps become closed on hot days. The locked joints are known as "frozen" joints.

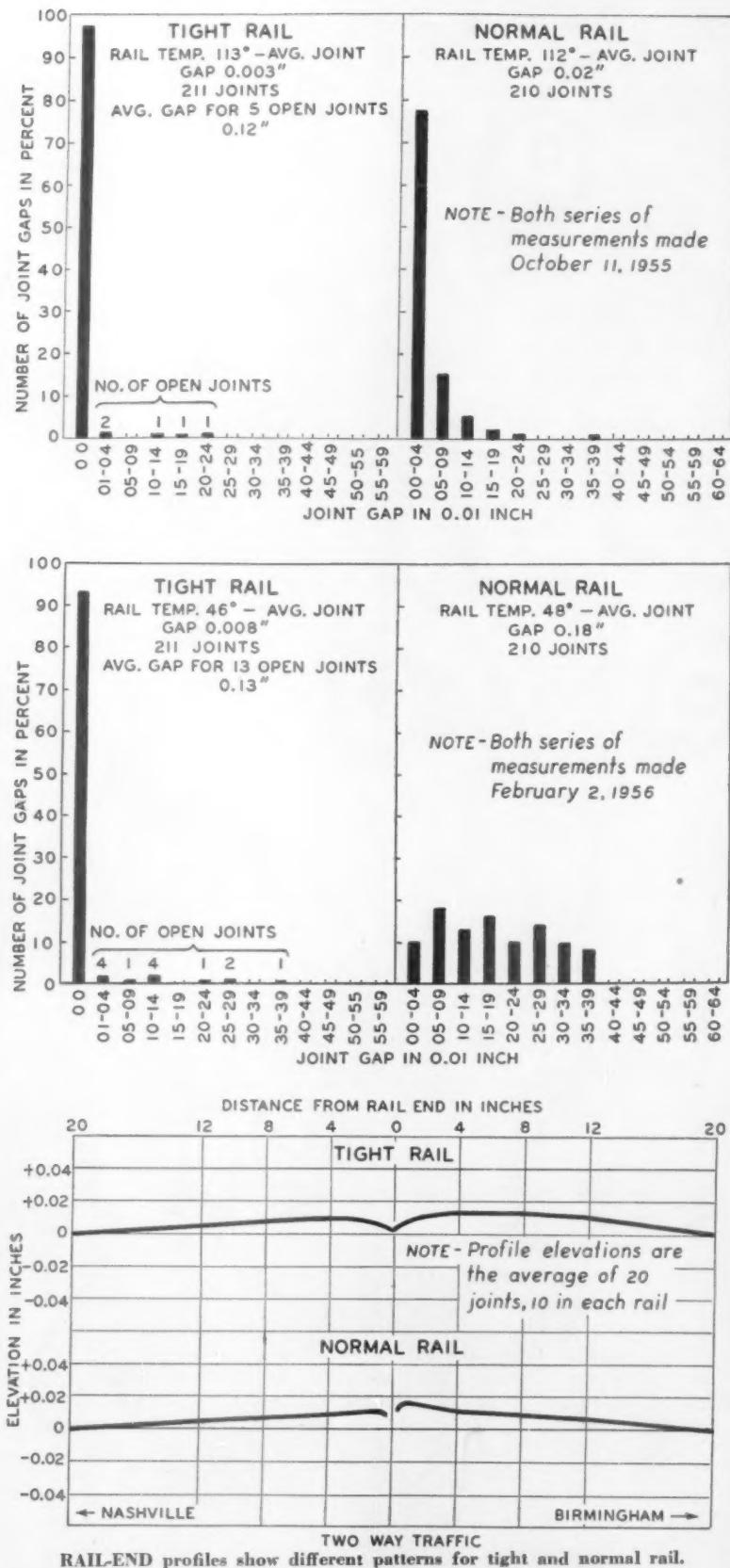
In this article, however, the term "frozen" joint describes a joint that has been deliberately "locked."

during the warm weather in the fall of 1955 and during the winter of 1955-1956 with low rail temperatures.

It will be observed, said Mr. Magee, that there is a significant difference in the joint-gap openings of the tight rail and the normal rail. With the tight rail at the high temperature reading, practically all of the gaps were entirely closed, he pointed out, whereas there were an appreciable number with openings in the normal rail. In the winter readings with low rail temperatures, relatively few of the tight-rail gaps showed any opening, and practically all of them were tightly closed. However, with the normal rail, practically all of the joint gaps were open and there was a variation in the amount of opening typical of normal track.

Measurements are also being taken of the rail profile over a number of joints in both the tight and normal rail, and while these measurements have not been of sufficient duration to indicate conclusive results, an accompanying diagram does indicate that there is some flow or batter at the unhardened rail ends in the tight-rail installation, whereas, none is indicated on the hardened ends of the normal rail.

During its three years of service the tight rail has developed chipping at many of the joints. This has been repaired by welding. Although the



service period has not been long enough to develop conclusive results, it is Mr. Magee's opinion, from the observations so far, that it would be preferable in tight-rail installations to have the rail ends hardened and beveled as in ordinary or normal construction to avoid difficulty with chipping. If this is done, he said, it would perhaps require some grinding after eight to ten years service to remove the unevenness in wear between the hardened rail end and the remainder of the rail, but this would appear to be less objectionable and less expensive than repairing the chipped ends by welding.

Most of the rail joints in the installation, said Mr. Magee, look fine after three years of service, and in many cases the metal has flowed under the wheel loads so that it is practically impossible to detect where the rails end.

#### On the Lackawanna and LV

The Lackawanna has a total of 27,240 track-feet of tight-joint construction. It has four installations in station platforms totaling 5,000 ft, three in tunnels totaling 17,640 ft, and two in open track totaling 4,600 ft. All these installations were made with 132-lb RE rail. For the most part the anchorage consists of compression clips on every tie in the test areas, with the ties being box-anchored for some distance beyond the ends of the test area.

The Lehigh Valley has eight installations of tight-joint construction, four through station platforms and four in open track. The total length is 5,000 track-feet. About 25 per cent is anchored with compression clips on every other tie, and 75 per cent with base-type anchors. Where anchors of the latter type are used three rail lengths at each end are box-anchored at each tie, while the center sections are box-anchored at every other tie.

The installations on this road were made in 1951. The road recently reported that about half of the joints were holding and half were open about  $1/16$  in. About 10 per cent of the joints are rolled over and 2 per cent are spalled. Asked to state the advantages of this type of construction the road said there is "no batter or low joints and less chipping," and that the rail is "easily replaced if damaged or worn."

# Railroads Need Cost Accounting

... BUT MUCH PAPERWORK CAN BE CUT OUT

Every railroad in the United States should make a "searching scrutiny" as to how well it is equipped to perform the increasingly important function of cost accounting, F. G. Gurley, president of the Santa Fe, said in Los Angeles May 29.

Mr. Gurley, addressing the 62nd annual meeting of the Accounting Division of the Association of American Railroads, added that railroads should eliminate accounting functions "which are not really necessary, because, as I see it, we must inevitably take on some additional expense in the refinement of cost accounting."

"Accountants can do something more than they have done," the Santa Fe chief executive continued, "if they first become acquainted with the potentials of different techniques and stimulate the ingenuity of their associates by discussions and comparisons designed to bring on argument and debate, which finally leads to the best possible treatment, not only of major questions, but of the many thousands of humble and daily chores which taken together comprise the operation of a railroad. This will carry you into considerations which, at first blush, one might think should be reserved for other departments, but I feel strongly that there is no departmental sanctity

about this broad question of productivity and the reduction in management expense."

## Not Enough Freight Cars

Why don't U. S. railroads own enough freight cars?, Mr. Gurley asked. One reason, he said, is the "financial ability of some railroads," to which improper depreciation allowances are a contributing factor. Another reason is that "the per diem charge for use of freight cars is lower than it should be."

"Then, in all frankness," he continued, "there has been what I believe is an overindulgence in corporate selfishness. Certain companies have taken undue advantage of the fact that the AAR cannot force any one railroad to furnish its fair share of the freight cars needed for the commerce of the country, and the further fact that the Interstate Commerce Commission does not exercise any such authority."

P. F. Kendall, vice-president and general auditor of the Southern Pacific, who was elected chairman of the division to succeed P. D. Jonas, comptroller of the Lackawanna, told the May 29 session that improvement of procedures for handling accounting and paperwork is a never-ending project.

"In my opinion," Mr. Kendall said, "we should be working more closely together in such things as punched card reporting of car movements. . . . The best approach to improved methods on an individual railroad is the creation and training of a research staff, able to devote the necessary time to study and application of new methods. . . .

"Research in railroad paperwork should contemplate a broad study of clerical work handled interdepartmentally, for it is a fact that there is more paperwork in departments other than accounting departments than is handled in railroad accounting departments."

By encouraging use of simplified methods and modern office machines to handle the large volume of paperwork done in other departments, Mr. Kendall emphasized, and by eliminating unnecessary detail and refinement in accounting department requirements of other departments, accounting officers can make significant contributions to the net incomes of their respective railroads.

Mr. Jonas stressed the importance to railroad accounting officers of competitive transportation costs and market research. "We have witnessed an alarming erosion of railroad freight traffic from 66 per cent of total ton-miles in 1947 to less

## NEW OFFICERS OF AAR'S ACCOUNTING DIVISION



P. J. Kendall



Frank E. Martin



J. I. Barnes

than 50 per cent," he said. "We have reached a point where we must meet competition where we find it, as our competitors are doing, and not build rate schedules around market relationships. We have a great opportunity to increase the railroad industry's proportion of intercity ton-miles if we will find out enough about trucking costs and our own costs.

"As the objective of railroads is to move profitable traffic, our eyes must be kept on this objective regardless of the difficulties that might be encountered in making the required studies and implementing the tariff changes. There is imperative need for market research to determine, among other things, the out-of-pocket cost of handling different commodities and the cost of handling this traffic by the lowest cost competitor.

#### Skilled Hands Needed

"Cost-finding has its dangers, especially in the hands of theorists," Mr. Jonas concluded. "It is certainly no cure-all. But it is an inevitable corollary to competition, and in the skilled hands of practical accounting men it can be a powerful tool for dealing widely and effectively with competition. I think this is the appropriate time to give serious consideration to the importance of competitive transportation costs and market research."

E. A. Hancock, auditor passenger accounts, New York Central system, reported the status of a study aimed at creation of a centralized U.S. government disbursing office for payment of all carrier passenger transportation bills now being rendered to civilian departments and agencies.

"A study of such bills rendered by thirty of the larger railroads for one month strikingly showed the voluminous number of separate bills required under the present procedure," Mr. Hancock said. "In analyzing the study, it was brought out that 6,744 bills were required to cover 33,436 government transportation requests issued by the civilian agencies. A breakdown of this analysis showed that 247 government addresses each received one bill, 147 two bills, 105 three bills, 72 four bills, 57 five bills, 142 received from six to ten bills, and 169 addresses each received eleven or

more bills. Altogether, the 6,744 bills had to be mailed to 939 different addresses of government agencies.

"If one central disbursing office were established, railroads would not be required to prepare separate public voucher forms for transportation requests for each separately located office or establishment of each federal agency," the NYC officer continued. "All transportation requests on hand at the close of the billing period could be included in one bill, regardless of the department. . . . A maximum realization of the possible economies could result in reducing the 6,744 bills to one for each carrier included in the survey, or 30 bills on a monthly billing, 60 bills semimonthly, 120 quarter monthly.

Based on developments to date, Mr. Hancock concluded, "we believe it is not overly optimistic to predict that establishment of a central U.S. government disbursing office will soon become an accomplished reality, possibly before the end of this year."

A. R. Seder, vice-president of the AAR's Finance, Accounting, Taxation and Valuation Department, addressed the final session May 31. "I had been tempted to speak of the relationship between men and machines as a partnership, but this would have been wrong," Mr. Seder said. "Partnership implies a degree, at least, of equality, and the right of the parties to exercise judgment and to participate in decisions. This is a function machines cannot perform. . . . Management must believe in the essential dignity of man, with his hopes, his fears and his aspirations. When this belief is basic and compelling, the attitude it builds will permeate all levels of employment—supervisors and those who are supervised. . . . Today's prodigious labors are going to be most effectively done by respected and self-respecting people using the most highly developed machines. With this combination the results can be startling."

The meeting also was addressed by P. M. Shoemaker, president of the Lackawanna, and E. R. Miller, auditor of disbursements, Union Pacific.

New officers of the division, in addition to Mr. Kendall, are: First vice-chairman, F. E. Martin, vice-president and comptroller, Illinois Central; and, second vice-chairman, J. I. Barnes, comptroller, Baltimore & Ohio.

## Wide Range

For over a year, the Chesapeake & Ohio communications department has been working to develop a communications network for freight car reporting and accounting, and also to provide "grist" for the road's Univac computer at the general offices.

Studies have been controlled by three basic communications concepts:

- That all usable data on a document be initially coded in a language and form intelligible to both man and machines.
- That the code be of a type readily transported over communications channels from point to point at high speed.
- That the received intelligence at the distant point be suitable for reproduction in its original form, or in another machine language.

The C&O's objectives in the field of business data automation are three, according to Paul A. Flanagan, superintendent of communications, who discussed the matter at length at the recent annual meeting in Cincinnati of the AAR Communications Section.

"As an *immediate accomplishment*—the substitution of Teletype for manual Morse and telephone transactions, to make possible a uniform and efficient method of obtaining train movement information from yard to yard. Also, the simultaneous receipt of this information in the office of the superintendent of freight transportation to expedite the handling of diversions, location and correction of misroutes, and car tracing.

"The *intermediate gain*—a better service and sales tool through the establishment of a central movement information processing center to provide selective information on car movement to freight traffic offices.

"The *ultimate goal*—revenue accounting through computer use of information prepared in machine language at the time of initial recording in the field."

The C&O, like other roads, begins operations with the freight revenue waybill. A clerk copies pertinent information from the waybill, using a Teletype page printer with keyboard, enabling him to see the copy so he can correct any errors. The page printer

# of Advances in Communications

is connected, circuit-wise, to a typing reperforator, which makes a punched tape as he "types" the waybill information. This information is also printed on the tape, for easy identification. Then the short piece of tape, or unit tape, is inserted in the folded waybill and filed in a bill rack.

When a train is made up in the yard, the waybills and their tapes are pulled and put in train order. The tapes for the cars are put through a transmitter, connected to a reperforator which produces a long tape of the train consist. Information common to all cars in the train, such as the train number, destination, conductor's name, departure time from yard, etc., are punched at the beginning of the long tape. This tape is then inserted in a transmitter for sending the consist information to the next yard office and to other locations requiring the consist.

This method of preparing and sending train consists is the "torn tape" method.

The question can be asked, Why not use punch cards, one card for each car? One answer is that most yard clerks are familiar with Teletype equipment, hence little training is required to set up a car reporting system using this equipment. But the C&O has another reason. Said Mr. Flanagan, "Lack of space and the cost to provide such space at many locations for tape and card handling equipment were determining factors. This, however, does not rule out the possible use of card handling equipment at some major locations."

The Teletype switching centers at Detroit, Huntington and Richmond are served by numerous way circuits reaching all important yard and telegraph offices in their area. The three relay points are interconnected by numerous duplex trunks (simultaneous two-way operation) to expedite the delivery of the locally collected information to Richmond and eventually to the central movement bureau. At the central movement bureau classification of received data will be accomplished, and pertinent data forwarded, on a selective basis, to some 86 on- and off-line freight traffic offices. Other data, in either the original or a processed form, will be

furnished the car accountant at Richmond, and to the Univac computer at Cleveland."

"Data in a semi-processed form, and available in IBM punched cards, will be forwarded to the Univac at Cleveland from the accounting offices in Richmond, Huntington and Detroit.

"Our efforts," said Mr. Flanagan, "over the past two years have resulted in the installation of the three torn tape switching centers and approximately 13,000 miles of 75 words-per-minute way and trunk Teletype facilities, serving some 86 geographical locations. Over 900 units of Telepype equipment have been placed in service."

The Union Pacific has begun a program of providing long-distance toll dialing, the first installation being in the Pacific Northwest around Portland, Ore. For these telephone circuits, as well as for the general demand for increased communications circuits, the UP has been making extensive installations of carrier over the last few years.

## Electronic Reservations

"We can demonstrate that the railroads joining the Magnetronic Reservoir system, as it is now constituted, will enjoy tremendous savings beyond what we had originally hoped for, due to the fact that Teleregister has designed the equipment to require a minimum amount of time on the line for making a call." So stated H. J. Van Ness, manager transportation section, Teleregister Corporation, in discussing the electronic reservation system being installed on the New York Central, New Haven and Santa Fe (Railway Age, May 21, p. 103).

Basically, the system consists of an electronic device for the storage of information on available, reserved and sold accommodations, and a means of reading out this information and changing it from many remote ticket selling locations. These three railroads will be able to provide practically instantaneous reservation service from coast to coast.

The Southern Pacific has made extensive use of closed circuit tele-



"We can all be proud of the advances made in the development and installation of communication devices for a better operation," says R. G. May, vice-president, operations and maintenance, AAR. Chairman R. A. Hendrie, general superintendent of communications, MP, presided (at right)

vision for visual surveillance of yards and freighthouses and for the inspection of freight car trucks in hump yard inspection pits. According to J. W. Brannin, electronics engineer, daytime viewing presents no problem with respect to light. In most instances they used two cameras for viewing—one for close-ups, the other for wide angle shots.

Night viewing required extra lighting, but a satisfactory picture could be obtained "with the incident light down as low as seven foot candles while utilizing lenses with speeds up to approximately f2.5. . . . It appears that a satisfactory job of night viewing can be performed in most railroad yards with the incident light over the area to be televised at approximately 10 foot candles."

## Next Year It's Toronto

Canadian railroads will play host to the Communications Section next year when the group will meet May 21-23 at the Royal York Hotel in Toronto. Attendance at this year's convention was the second highest on record: a total of 715 including 257 railroad men. The presiding officer was chairman R. A. Hendrie, general superintendent of communications, Missouri Pacific. For more details about the convention see the June Railway Signaling & Communications.

# How to Make Profitable Rates

Answering Railway Age's invitation, two readers suggest solutions to the challenging "traditional differentials" dilemma

When a railroad is losing traffic and earnings because trucks have captured the shorter hauls (the higher rated ones, 300-400 miles) of a commodity, how can the situation be corrected—in view of the "traditional differentials" pattern? The question was asked in the Forum article of our April 2 issue, and readers were invited to answer it, if they could. Two well reasoned and comprehensive replies have been received, which, in brief, conclude that—

**1. It depends on specific circumstances.** Every case is different. I propose some formulas which, if applied, will give the right answer.

**2. You should forget your present rates, which had their origin in conditions now vanished. Start building new rates based on present-day conditions.**

The first answer comes from E. G. Kreyling, Jr., director of traffic research of the Frisco. The second is from Hugh A. Dugan, a student of transportation who is, by vocation, in the property insurance business.

For ease of understanding the solutions offered by Messrs. Kreyling and Dugan, the chart which was used to illustrate the problem is reproduced herewith.

A, B, C, D and E on the chart represent origins of a commodity, respectively 200, 300, 500, 700 and 900 miles from the principal market. The published railway rates are 50 cents per 100 lb from A, 55 cents from B, 60 cents from C, 65 cents from D, 70 cents from E. The trucks have captured all the traffic from A and B and none of it from the other origins. The rate charged by the trucks is 35 cents from A and 52½ cents from B. The railroad could cut under those rates at a profit and recapture this tonnage—but, in order to do this, it would destroy the traditional symmetry of the railroad

rates (i.e., B 5 cents above A, C 5 cents above B, and so on).

So, the following alternatives are possible:

1. Do nothing—let the trucks keep the A and B traffic, thus pretending that A is not actually enjoying a transportation cost 25 cents less than C, and B a differential of 7½ cents under C.

2. Drop the railroad rate at A to 35 cents (or less, if necessary to regain the traffic) and to 52½ cents or less at B. This action, some would say, would "destroy" the "traditional differential" of 5 cents between A and B, B and C. Others would

answer that such railroad action would not "destroy" anything—the destruction of the historical differentials having already been accomplished by the trucks.

3. Establish 35 cents as the railroad rate at A, 40 at B, 45 at C, 50 at D, and 55 at E. Such rates would meet the truck competition at A and B (where truck competition exists), and would restore the "traditional differentials" at C, D and E, where there is no competition.

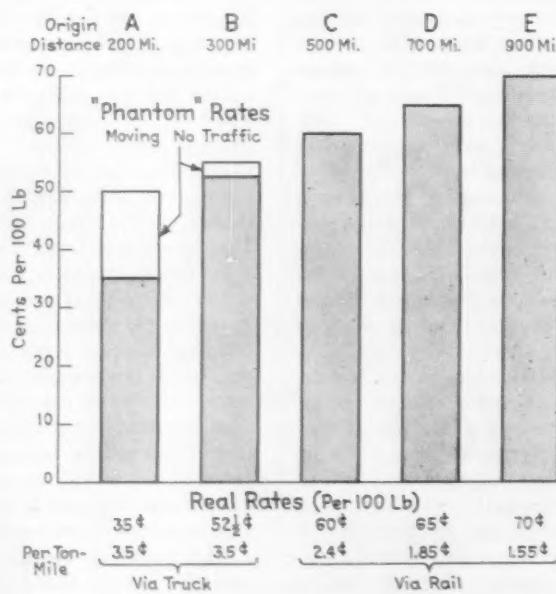
It was the assertion of Railway Age that not all these three answers can be correct, and we asked what the correct answer might be.

## CORRECT FIGURING

... Will Give the Solution, Mr. Kreyling Asserts

The first step must be to determine the average weight of a carload of the commodity in question. This information is necessary for the preparation of the table at the right. In this case, it is assumed that the average weight is 50,000 lb.

Origin	Rail Rate Per Car	Rail Cost Per Car	Profit Per Car	Percent In Car Volume	Changes In Car Volume
A	\$250	\$49	\$201	A	a
B	275	62	213	B	b
C	300	88	212	C	c
D	325	114	211	D	d
E	350	140	210	E	e



It is obvious that the present profit enjoyed by the railroad is  $(212C + 211D + 210E)$  since A and B are each equal to zero, because the trucks haul the freight.

Changes should be made so as to increase the railroad's profits. In order to do this, *certain forecasts must be made*. A change in the present actual rate structure will induce a change in the volume shipped from each source. A satisfactory estimate must be made of the effect of differentials in transportation cost on the distribution of the market between producers at A, B, C, D and E. A change in rail rates might cause a change in truck rates. A proper evaluation of this potential reaction is necessary.

#### Price War a Danger

If it is assumed that the truck companies will not reduce their rates if rail rates from A and B are lowered to 35 cents and  $52\frac{1}{2}$  cents, respectively, then such an adjustment should be made at once. Such a change could have no effect on C, D and E; therefore, profits would be increased if some of the business moved via rail from A and B. Expressing this mathematically  $(126a + 200.5b + 212C + 211D + 210E)$  must be greater than or equal to  $(212C + 211D + 210E)$ .

The figures of 126 and 200.5 used above represent the adjusted profit on cars from A and B after the rate reduction.

If this action is liable to start a price war, one must give careful consideration to the results. A second calculation should be made using a rate structure which the trucks could not undercut. If it is assumed that trucks could not meet a 10 per cent reduction at A and B, then such a reduction would give all the business to the rails. However, while the railroads would capture all the business, it is possible that losses in sales by producers at C, D and E would be so great as to make the move unprofitable for the railroad.

If  $(108a + 173b + 212(C-c) + 211(D-d) + 210(E-e))$  is greater than  $(212C + 211D + 210E)$ , the railroads need not fear a price war, but may actually look forward to it. On the other hand, if  $(212C + 211D + 210E)$  is the larger of the two, a better solution must be found.

"A schedule of differentials must be determined so that the greatest profit will be made by that particular combination of volume, cost and revenue."

In either event, some consideration should be given to substantial rate reductions for C, D and E. A reduction of 6 cents per 100 lb would make the real rate reduction to these points greater than the 10 per cent cut given to A and B and should pull business from A and B to C, D and E. It is possible that the combination of price, cost, and volume expressed mathematically as  $(108a + 173b + 182(C+c) + 181(D+d) + 180(E+e))$  would be greater than any previous solution.

While it would seem that there are innumerable solutions, an electronic computer could easily determine the best combination. It is also possible to calculate manually several variations and choose the best of those calculated, for, even though it is not the best possible, it would improve earnings.

It may also be argued that the forecasts required are not possible. Such an argument betrays a lack of understanding of the rate problem. In making the decision to keep phantom rates, *the rate-makers have fore-*

*casted already* that all other solutions would yield profits less than  $(212C + 211D + 210E)$ . Since this is usually not true, lack of action is playing right into the hands of the trucks.

A unique solution to your problem is not suggested. Any one of the three solutions you propose may possibly be the best under particular circumstances. It would seem to be generally true, however, that conditions given in your problem would already have put A and B in such a favorable position that they have almost all the business. This makes the decision to keep phantom rates untenable.

Usually phantom rates should be destroyed. It is also highly probable that the *real* present rate differentials (i.e., not the rates in the railroads' tariffs but the rates the traffic is actually paying) are not the best for the railroads. A schedule of differentials must be determined so that the greatest profit will be made by that particular combination of volume, cost, and revenue.

## BUILD NEW RATES ON COSTS

#### ... Says Mr. Dugan

No. 1 is not the right answer, because it deprives the railroad of traffic from A and B which the railroad can haul profitably at charges below truck costs. No. 1 is also not the answer because it leaves A and B with such a transportation cost advantage over C, D and E that the latter (which still ship by rail) are going to go into a relative decline as sources of traffic.

No. 3 is not the right answer because—while it would restore the "traditional differentials"—it would seriously (and probably unnecessarily) reduce total railroad revenues from hauling this commodity.

Thus, by the process of elimination, the answer must be found either in No. 2 or in some other alternative that *Railway Age* did not suggest. No. 2 might be adopted as a tempo-

rary measure—since it seems to fit the realities better than Nos. 1 or 3. But there is no proof there is anything particularly scientific or sacred about a rate of 60 cents from C, with arbitrary differentials upward or downward from other origins.

For the railroads to make themselves as invulnerable to competition as the nature of railroading permits, they need to build their rates on their own costs—with full knowledge of their competitors' costs.

Railroads are being forced—whether or not it is their inclination—to quit trying to keep poorly located producers in business. Instead of the railroads' absorbing a part of the economic handicaps some poorly located producers are suffering, they must endeavor to collect costs of service from all customers—and not

put any more "taper" into long-haul rates than relative costs will justify.

The railroads, their customers, and the regulators have, in the past been able—at least in some measure—to distort the economic and geographic map of the country. Now they have to quit trying to distort the map and, instead, must strive to conform themselves to the map that nature has made. They have to take into account that 1,000 miles is a lot more miles than 500 miles; and that it doesn't cost any more (except in insurance risks) to haul 40 tons of machinery than 40 tons of sand.

Let's suppose the railroads would start with a single basic cost figure, such as the cost of hauling an empty freight car a predetermined distance. The cost could be compiled in two ways—(1) on a direct or variable cost basis; and (2) on a total cost basis, including fixed charges. These costs would vary only between rating territories, each territory to have its basic costs. The direct or variable cost figure (1), of course, would be the "floor" below which no rate would ever go—while the total cost (2) would be the standard to be aimed at, or exceeded, in all but exceptional circumstances. Upon these basic figures would be built, synthetically, rates giving estimated weight or value to each factor added to, or otherwise modifying, the basic figures.

#### Addition and Subtraction

Some of the factors (e.g., risk of damage claims or light loading per cu ft) would be additions to the basic cost; others (e.g., prompt loading and unloading—or loads for cars in the direction of prevailing empty movement) would be subtractions. The net total of these additions and subtractions would constitute the rate to be established. The basic figure would represent an average, whereas the additions and subtractions (the modifiers) would reflect particular conditions and circumstances. There would be a ruling minimum (direct cost) below which the rate could not go, and regulations and/or competition would set the ceiling.

A freight rate representing all the cost elements that compose it, each element accurately determined and

frequently revised—and different for each segment of railroad and varying constantly with traffic density—would surely be impractical. In a limited form, however, it might be possible to realize the advantages of cost rating in considerable degree, this reasoning being based on the premise that cost estimates would be more nearly accurate—and more likely to fit the exigencies of competition—than the present practice of "averaging out"—undercharging some traffic and overcharging some.

Confidence in the practical accuracy of such cost estimates might be justified by the fact that the bulk of general commodity movements are fairly uniform between various centers at the different seasons, and by the extent to which freight handling is becoming standardized.

Discrimination would have no place in this picture. The rate would merely be adjusted to conditions as they are found, which is exactly what the railroads' competitors have been doing for years.

In the case under consideration, the rate from each of the five separate points—A, B, C, D and E—would be separately determined, starting in each instance with the territorial basic rate and building from that base, in this order:

##### Additions to the base:

1. An addition attributable to the weight of the lading.
2. An amount representing handling cost, if any; this to include difference in route costs.
3. An addition representing cost attributable to the loading characteristics of the cargo. This figure would be taken from pre-established scales of charges.

##### Deductions:

1. For volume and/or regularity of movement.
2. To meet competition.

These would be the principal modifiers of the rate, although after thorough investigation of such a system it might be deemed feasible to include others: For instance, the car-

rier's profit could be shown as an addition to rate (there are no legal restrictions to doing so) and wherever a traditional differential must still be observed, it would appear in the form of a subtraction from rate.

In the case of A, a deduction on account of highway competition would be made to the ultimate extent (other factors and their values remaining unaffected), i.e., down to, but not lower than, the total direct cost. If the deduction brought a return of some of the traffic to the rails, well and good. If not, no further attempt to get it should be made.

As for distance B, it is more likely that a relatively slight deduction would meet the competition. For C, D and E, competition has little or no influence, but other factors calling for rate adjustment might be present. The location C might be such as to cause a higher cost in the routing of the shipment, this calling for an addition to the rate. Shipments from D may be exceptionally regular, and in large volume; so a deduction would be in order. At E the shipper demands continuance of a protective differential of long standing. This adjustment, if allowable, would show in the rate.

#### Conforming to Economic Map

In any event, railroad rates constructed in this manner would conform to the country's geographic and economic map. They would not try—futilely as at present—to distort the map.

Underlying the procedure, and of utmost importance, would be its possible effect on the volume and profitability of railroad traffic.

If such rating procedure should help to increase the volume of railroad traffic, it would be thoroughly in the public interest because of the interrelationship that exists between high volume and low rates. One induces the other.

Regulation, of course, exists to promote the public interest.

**"For railroads to make themselves as invulnerable to competition as the nature of railroading permits, they need to build their rates on their own costs—with full knowledge of their competitors' costs."**



New York Central Photo



**IMPROVED HIPOWERS**  
**IMPROVE TRACK**

How smooth and beautiful this roadbed looks! Day and night heavy diesel freights and fast passenger trains roar over it and put the best track to test. Strains, stresses, constant hammering, expansion and contraction, subject roadbeds to terrific beating.

The tremendous pressure of our heavy railway spring washers gives enough reserve power to hold rails tight longer, to maintain bolt tensions, to reduce effectively your cost of maintenance.

**THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.**

A COMPLETE LINE OF RAILWAY SPRING WASHERS



## Send just ONE man to handle scattered maintenance jobs

THE "one-man crew" pictured above—a D Tournapull—requires only a phone call to get rolling at 28 mph to any work assignment. Operator just hops on and goes! No getting up a head of steam, no time-consuming switching, no loading or unloading of equipment. A mile is only a few minutes away. Rig crosses tracks without blocking... does no damage to rails, switches, etc. Big, low-pressure tires deflect to move load evenly over obstructions... do not chamfer ties, trip or damage block signals. No delay to revenue traffic... no shut-downs for trains to clear.

D Tournapull works alone to self-load, haul, spread material... repair washouts, trim side-slopes to improve drainage, handle earth-moving for new roadbeds and relocations, fill around bridge approaches. It can transport and spread

ballast, stockpile and reclaim coal, build grade crossings. Equipped with 8' blade, it can also handle dozing jobs. Because of its open top, it can be shovel or hopper-loaded. With ability to turn around nonstop in space only 26' wide, "D" works easily in tight quarters.

Whatever the job, Tournapull can easily drive off right-of-way when mainline traffic comes through... a minute or so after the train goes by, is working again.

And here's another cost-cutting advantage. You can easily interchange LeTourneau-Westinghouse 9-ton rear-dump, 10-ton crane or 10-ton flatbed hauler behind same 2-wheel prime-mover. This ability to handle a wide range of assignments keeps your equipment investment working full-time.

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**LeTourneau-WESTINGHOUSE Company**

Railroad Sales Division

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

(Continued from page 16)  
ment sales work with that company's eastern sales offices.

**George T. Paraschos**, manager, New England sales, **Symington-Gould Corporation**, has been appointed vice-president, New England sales, at Boston.

### OBITUARY

**W. H. White**, vice-president, **T-Z Railway Equipment Company**, died May 24 at Roanoke, Va.

**Frederic H. Bassett**, 55, district sales manager, **American Steel Foundries**, died April 29 at Denver.

### Financial

**Illinois - Missouri Terminal.**—*Acquisition of IT.*—The ICC's order authorizing 10 railroads to acquire joint control of the properties of the Illinois Terminal has now become effective. IT's properties are to be purchased by I-MT, which was organized for that purpose by the participating roads (Railway Age, Apr. 23, p. 12). The commission's authorizing order was originally scheduled to become effective last month, but the effective date was postponed while petitions for reopening were considered and denied. Then came an order of May 31, making the authorizing order effective 10 days thereafter.

### Dividends Declared

**CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.**—\$4, semiannual, payable June 18 to holders of record June 1.

**DELAWARE, LACKAWANNA & WESTERN.**—Stock dividend (two shares of New York, Chicago & St. Louis common stock for each 33 1/3 DL&W shares held), payable July 2 to holders of record May 31.

**DENVER & RIO GRANDE WESTERN.**—62 1/2¢, payable June 18 to holders of record June 8.

**DETROIT, HILSDALE & SOUTHWESTERN.**—\$2, semiannual, payable July 2 to holders of record June 18.

**SEABOARD AIR LINE.**—62 1/2¢, quarterly on new two-for-one common, payable June 27 to holders of record June 15.

### Applications

**CHICAGO & NORTH WESTERN.**—To issue 75,000 shares of no-par common stock in connection with a stock option plan.

**DELAWARE, LACKAWANNA & WESTERN.**—To issue \$3,970,000 of equipment trust certificates, the first installment of a proposed \$7,500,000 issue, the whole of which will finance acquisition of equipment expected to cost \$9,403,400.

Description	Estimated Unit Cost
500 box cars (Major Car Corporation)	\$ 7,583
100 box cars (ACF Industries, Inc.)	9,758
100 covered hopper cars (ACF)	9,439
2,400-hp diesel-electric locomotive units (Fairbanks, Morse & Co.)	241,000

The certificates would mature in 30 semi-annual installments, beginning November 15. They would be sold by competitive bids which would fix the interest rate.

## Organizations

**American Railway Engineering Association.**—Forsaking Chicago for the first time in 31 years, the association will hold its 1957 convention at the Sheraton-Jefferson hotel, St. Louis, Mo., on March 4, 5 and 6. This decision of the association's Board of Directors was made as a result of a growing feeling among AREA members that another convention city would be beneficial to both the association and its membership. Another consideration is a desire to give recognition to the many members of the association from the St. Louis area, and the southwest generally.

For its 1958 convention, the association will return to Chicago, but the meeting will be at the Sherman hotel instead of the Palmer House as formerly. The meeting that year will be in conjunction with an exhibition of the National Railway Appliances Association, which will be on display at the Coliseum.

The matter of where to hold the convention in years subsequent to 1958 remains open for further consideration on the part of the AREA Board of Direction. However, the Sherman hotel has agreed to hold its facilities available for the 1959, 1960 and 1961 conventions, subject to definite action on the part of the association.

**Association of Interstate Commerce Commission Practitioners.**—The following officers were elected at the annual meeting in Philadelphia recently: President, Erle J. Zoll, Jr., general commerce attorney, Illinois Central; secretary, Ford K. Edwards, National Coal Association; treasurer, Wilbur LaRoe, Jr., LaRoe, Winn & Moerman.

**Great Lakes Regional Advisory Board.**—The 96th regular meeting will be held at the Hotel Statler, Buffalo, N. Y., June 19-20. Speaker at a luncheon on the 20th will be Dr. Walter R. Dornberger, missile design consultant, Bell Aircraft Corporation, on the subject of "Satellites."

**Pacific Coast Shippers Advisory Board.**—The 100th regular meeting will be held at the Sheraton-Palace Hotel, San Francisco, June 14-15. Speaker at a luncheon on the 15th will be Roy G. Lucks, president, California Packing Corporation; subject, "Western Economic Expansion."

**Traffic Club of Montreal.**—H. B. Parr, assistant general freight traffic manager, Canadian National, has been elected president.

**Women's Traffic Club of Cleveland.**—At a meeting to be held June 14, at John Carroll University, Rev. Henry F. Birkenhauser, S. J., will speak on "The Impactograph and Its Use by Rail, Truck and Air."



An Adams grader spreads material and reinforces shoulders along railroad near Marietta, Georgia.

## How erosion along right-of-way can be checked CHEAPLY

**Flash floods** along your right-of-way can plug drainage ditches, loosen ballast, pile silt on tracks, cause a lot of headaches. Gradual erosion which takes place under scattered showers, melting snows, quick thaws and freezes, and high winds during dry seasons, causes the same trouble in a slower, less spectacular way.

Unless this "creeping paralysis" is stopped before it gets a good start, you face the problems of loose ties, spread rails, track dips, broken bank slopes, and eroded shoulders. Repairs then require the services of heavy on-track equipment, full work crews, and temporary slow-up or tie-up of freight and passenger service. You can prevent these costly consequences with planned, regular maintenance along your right-of-way. You can do it economically, with one man and a modern Adams motor grader. The Adams is an off-track machine which travels fast to the job, works fast when it gets there. It requires no special transport equipment, will not tie-up revenue traffic, disrupt schedules.



Periodic work with grader prevents costly erosion damage. Here a heavy-duty model grades right-of-way for drainage.

The Adams travels over highways and along your right-of-way at speeds up to 25 mph. It cleans drainage ditches, fills wash-outs, pushes dirt and ballast back on eroded banks, keeps busy at preventative maintenance while troubles are small and erosion repairs are easy to make. Low cost operation permits maintenance on a regular schedule at frequent intervals. Should an emergency occur... an earth slide, cave-in, or wash-out... your motor grader can reach the job quickly, clean it up, and return to its regular patrol duties.

With optional attachments, the work range of your grader can be extended to include many extra duties. **Scarfier** rips out hard-packed dirt, old road beds, roots and stones. **Dozer blade** digs out brush, pushes debris off right-of-way, backfills around culverts, cleans up yards.

Get more information on how this off-track machine can save money for your railroad, and headaches for you.

Adams graders are built in five sizes, to meet your requirements. Your inquiry will bring full details.

### A size ADAMS for every need

**Model 660** — 150 hp diesel, 27,730 lbs.

**Model 550** — 123 hp diesel, 23,500 lbs.

**Model 440** — 104 hp diesel, 21,500 lbs.

**Model 330** — 80 hp diesel, 20,500 lbs.

**Model 220** — 60 hp diesel, 14,865 lbs.

**Traveloader** — high-speed, heavy-duty, self-propelled belt-type loader for picking up and loading into trucks from windrows and stockpiles. 55 hp gasoline or 60 hp diesel engine, 16,800 lbs.

AG-35-RR-2



**LeTourneau-WESTINGHOUSE Company**

Railroad Sales Division

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

## Railway Officers

**CHICAGO & NORTH WESTERN.**—**J. A. Barnes** appointed assistant to chief engineer at Chicago, and **O. W. Smith** named acting division engineer at Madison, Wis.

**J. C. Ryan**, assistant to general manager at Chicago, retired.

**John W. Alsoop**, trainmaster at Milwaukee, appointed superintendent of Chicago freight terminals. The following trainmasters were transferred: **Robert R. Cantwell**, from Janesville, Wis., to Boone, Iowa; **O. W. Brooks, Jr.**, from Boone, Iowa, to Escanaba, Mich.; **Clayton J. McPhail**, from South Pekin, Ill., to Green Bay, Wis.

**A. G. Beatty** named supervisor scales and work equipment, Chicago.

The following appointments have been made: **Edgar H. Brobst**, from assistant to general superintendent at Omaha, Neb., to superintendent, Dakota division at Huron, S. D.; **John R. Cantwell**, from general superintendent—northern region at Green Bay, Wis., to newly created post of terminal manager at Chicago; **Ellmore E. Coover**, from superintendent, western division of the Chicago, St. Paul, Minneapolis & Omaha at St. James, Minn., to superintendent, Nebraska division, C&NW, at Norfolk, Neb.; **Roy W. Geigel**, from trainmaster at Escanaba, Mich., to train-



Edgar H. Brobst



John R. Cantwell



Robert W. Heron



William R. Martin

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**"Hotel Cleveland, sir?"**

Whether you arrive by train, plane or car, the friendliest place to stay is Hotel Cleveland, directly connected with Union Terminal.

No room charge for children under 14 when registered with an adult.

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SONNABEND OPERATED HOTELS

Distinguished American Landmarks

CHICAGO: Edgewater Beach Hotel

BOSTON: Hotel Somerset

NEW YORK CITY: Ritz Tower Hotel

CLEVELAND: Hotel Cleveland



master at Huron, S. D.; **Thomas W. Harvey**, from assistant superintendent at Mason City, Iowa, to assistant superintendent at Madison, Wis.; **Robert W. Heron**, from general superintendent — western region at Omaha to general superintendent of transportation at Chicago; **Harley Jorgensen**, from trainmaster at Huron, S. D., to trainmaster at Milwaukee; **William R. Martin**, from assistant superintendent at Madison, Wis., to superintendent, Galena division at Chicago; **Lawrence C. McDowell**, from trainmaster at Milwaukee, to assistant superintendent, Twin Cities division at St. Paul; **Leonard C. Reynolds**, from superintendent of transportation at Chicago, to superintendent, Twin Cities division at St. Paul; **Robert D. Tigar**, from trainmaster, Chicago Freight Terminal division, to trainmaster at Milwaukee. The following retired May 31: **William L. Mueller**, general superintendent, CStPM&O at St. Paul; **Harrison B. Smith**, superintendent, Galena division at Chicago; **John L. Walton**, superintendent, CStPM&O at Eau Claire, Wis.; **N. L. Waterman**, general superintendent—Chicago Terminal district. Offices of district general superintendents at Omaha, St. Paul, Green Bay and Chicago, abolished.

**Charles C. Shannon**, general

manager — passenger operations at Chicago, appointed general manager — system lines at that point. General manager—passenger operations position abolished. **F. E. Harrison** named assistant to general manager—system lines. **James J. Bulger**, supervisor of train schedules at Chicago, appointed trainmaster in charge of the North Western station at Chicago and the road's suburban territory, to replace **A. H. Frazell**, who becomes trainmaster at South Pekin, Ill. (More Officers on page 54)



Charles C. Shannon

## ROAD WASHES CARS STREAK-FREE

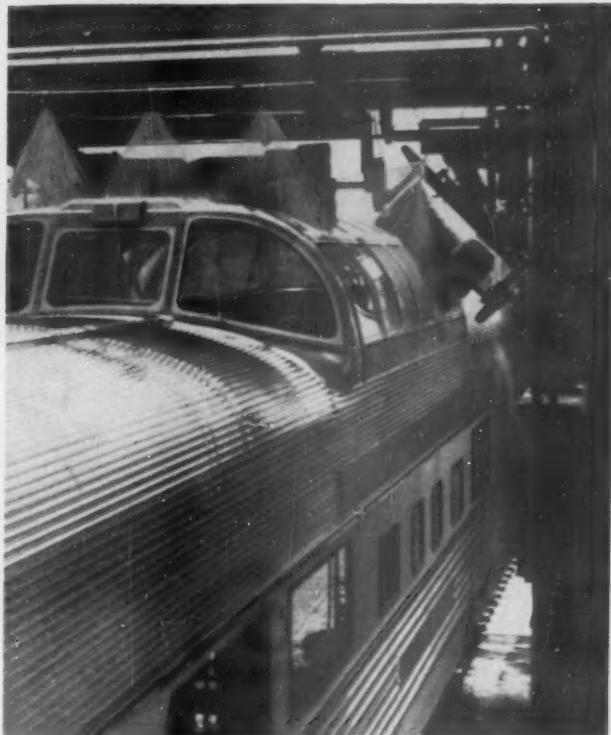
WITH A **75% SAVING** IN CLEANER COST

Improved  
Oakite Compound No. 88  
banishes road-soil  
— even coach windows  
come out spotless

The coach-washing compound used formerly at one terminal washed away accumulated oil, grease and crater dust all right. But while it solved one problem, it created another. Car sides and windows streaked badly. Dissatisfied with results, the company called Oakite.

The Oakite Technical Representative recommended Oakite Compound No. 88 for the job. He lent a hand—first, in seeing that the material was used properly; and, then, in making needed adjustments at the washer to get maximum results. In the first trial, a 3 ounce per gallon solution showed a big improvement. Not satisfied, the Oakite man reduced the concentration to 1 ounce. While this eliminated all streaking, it did not remove all dirt. So, 1½ ounces were used. That did it! With 125 cars washed that night, morning inspection revealed 125 shining examples of cleaning efficiency. Sides were streak-free, glass sparkled, dirt had vanished.

What's more, the cars not only were cleaned better, but also at 75% less materials-cost—each car taking about 10¢ worth of material instead of the former 45¢.



Oakite has materials for manual and automatic methods that speed and simplify car washing.

*Proving that . . . in railroad cleaning, it pays to call in Oakite, because you get cleaning results, and not just cleaning materials.*

IDEAS FOR SAVING in maintenance cleaning are given in this 56-page Booklet No. F-8055. Data include methods for cleaning running gear, filters, Diesel units, electrical equipment, and other tedious, time-consuming yard problems. For your free copy write Oakite Products, Inc., 46 Rector Street, New York 6, N. Y.



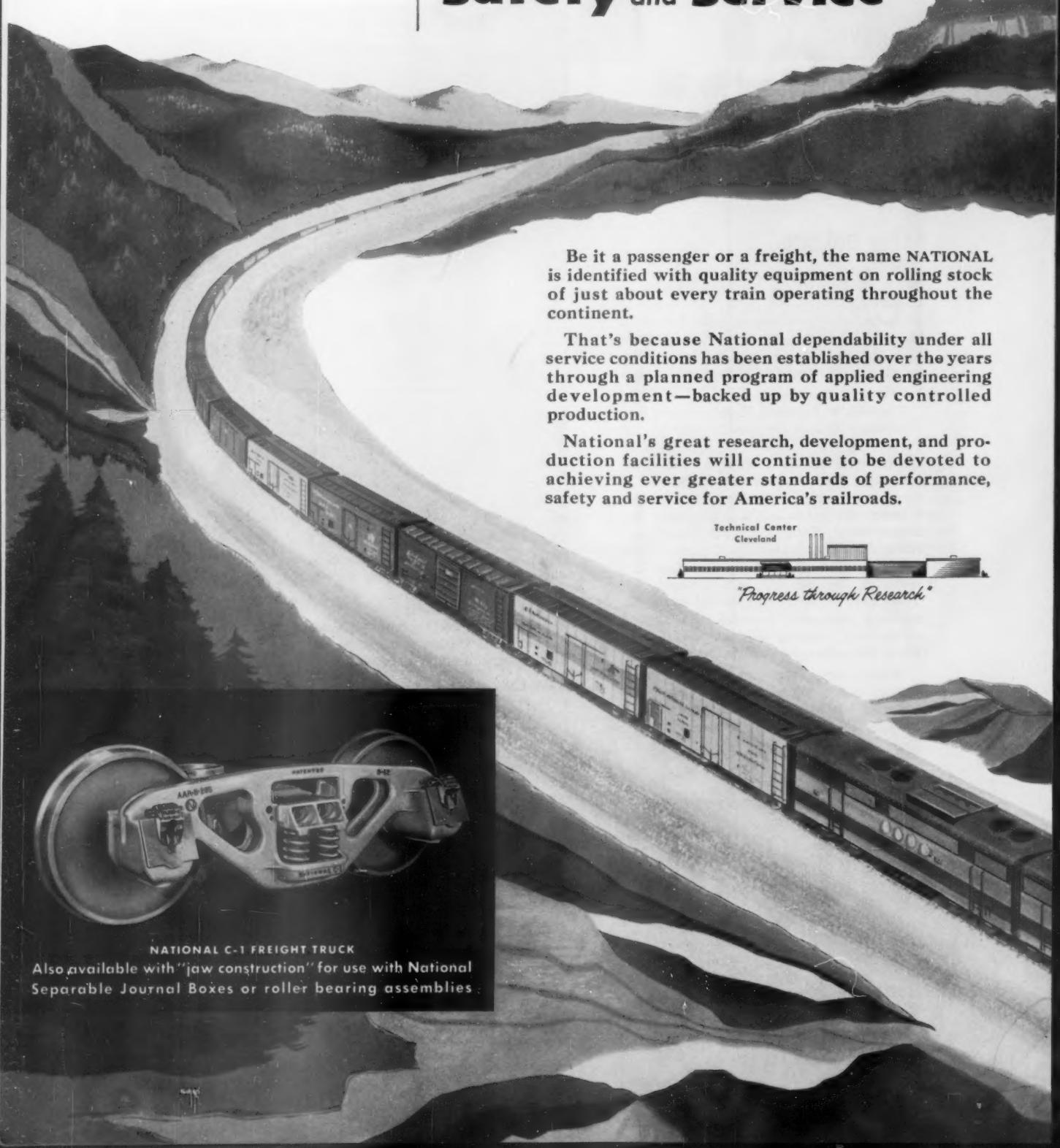
OAKITE PRODUCTS, INC., 46 RECTOR STREET, NEW YORK 6, N. Y.  
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# National Railroad Products

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**performance,  
safety and service**



Be it a passenger or a freight, the name NATIONAL is identified with quality equipment on rolling stock of just about every train operating throughout the continent.

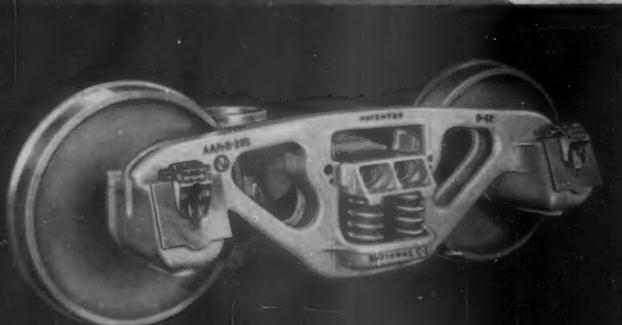
That's because National dependability under all service conditions has been established over the years through a planned program of applied engineering development—backed up by quality controlled production.

National's great research, development, and production facilities will continue to be devoted to achieving ever greater standards of performance, safety and service for America's railroads.

Technical Center  
Cleveland



*"Progress through Research"*

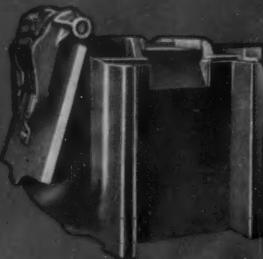


NATIONAL C-1 FREIGHT TRUCK

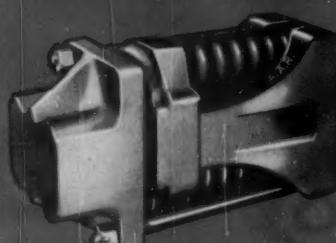
Also available with "jaw construction" for use with National Separable Journal Boxes or roller bearing assemblies.



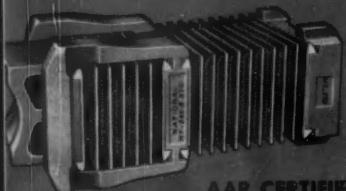
AAR Standard E Coupler



National Cast Steel  
Journal Boxes  
and Flexo-4 Lids

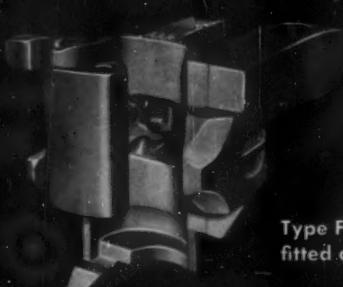


National M-17-A Friction  
Draft Gear



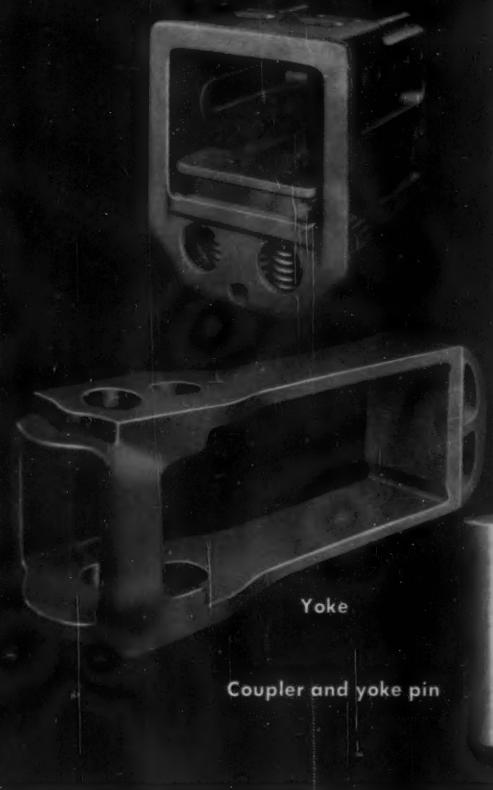
National Multi-Pad Rubber-Cushioned  
Draft Gears for Freight Service

### Type F Interlocking Couplers and Attachments



Type F coupler  
fitted complete

Striking casting with flexible coupler  
carrier and yoke support plate, assembled



Yoke

Coupler and yoke pin



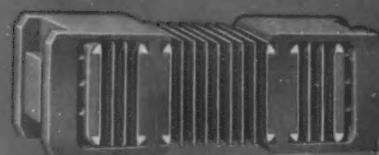
AAR Standard H  
Tightlock Coupler



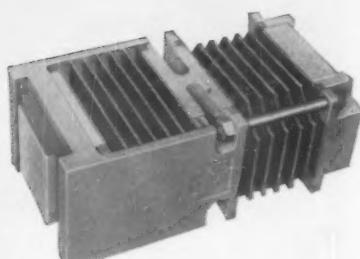
AAR Standard Vertical-Plane  
Horizontal Key Yoke . . . and  
full line of other yokes for  
rubber and friction draft gear



National Rubber-Cushioned  
Draft Gears for Diesels



National Multi-Pad Rubber-  
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National MF-400 Self-Contained  
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**NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY**

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EFFECTIVE TAMPING STARTS WITH

## Properly Positioned Ballast

By placing ballast in perfect position and in the proper quantity, the McWilliams Ballast Distributor can improve any machine or hand tamping operation. Distributor picks up ballast from intertrack space and shoulder and deposits it—both inside and outside of the rail—in desired depth for any track raise.

# McWilliams Ballast Distributor

Railway Maintenance Corporation

### PITTSBURGH 30, PA.

Designers and Manufacturers of: McWilliams Mole, Super Mole . . . McWilliams Tie Tamper, Crib Cleaner, Ballast Distributor . . . TieMaster . . . LineMaster . . . SpikeMaster . . . BoltMaster . . . Tie Unloader



**NEW YORK CENTRAL.**—John F. Nash, president of the **Pittsburgh & Lake Erie**, appointed vice-president—operation of the NYC at New York, succeeding **Kenneth L. Moriarty**, resigned. A biography and photograph of Mr. Nash were published in *Railway Age*, Jan. 16, p. 12. He will temporarily retain his position as head of the P&LE.

**B. S. Converse**, division engineer of the **Denver & Rio Grande Western** at Grand Junction, Colo., appointed assistant engineer—system of the NYC at New York.

**F. P. Sherkus** appointed administrative assistant to director, foreign freight sales, at New York, succeeding **Joseph G. McNamara**, named manager, grain bureau, New York, replacing the late **M. J. Shea**.

**PACIFIC GREAT EASTERN.**—The head office has been moved to 1095 West Pender street, Vancouver 1, B. C.

**PENNSYLVANIA.**—John A. Appleton, vice-president at Pittsburgh, retired June 1.

**Robert W. Tackbary**, president of Pennsylvania Trucklines, Inc., at Pittsburgh, resigned from that post to become general manager of TrucTrain activities for the PRR at Philadelphia. Mr. Tackbary will coordinate all phases of the PRR's participation in piggyback movement of freight, and will be assisted by **H. C. Kohout**, manager of TrucTrain operations; **C. S. Van Gunten**, manager of TrucTrain sales and services, and **H. M. Johnson, Jr.**, assistant to general manager, freight rates.

**Frederick N. Sass** and **Robert H. Smith** appointed research associates on staff of David C. Melnicoff, business analyst. Mr. Sass was formerly with the New York engineering consultant firm of Parsons, Brinkerhoff, Hall & Macdonald. Mr. Smith was formerly with the Stanford Research Institute.

**Robert B. Merrick**, district passenger manager, New York Region at New Haven, Conn., transferred to the Buckeye Region at Dayton, Ohio, suc-



Robert W. Tackbary

ceeding Arthur C. Striebel, who replaces the late Roy M. Harvey as district passenger manager at Pittsburgh.

**PITTSBURGH & WEST VIRGINIA.**—R. S. Anderson appointed assistant chief engineer maintenance at Pittsburgh and A. W. Harrington named principal engineer.

**PULLMAN COMPANY.**—C. William Bergstrom, assistant general auditor, retired May 31.

**QUANAH, ACME & PACIFIC.**—Raymond R. Reindl appointed general agent at Chicago, succeeding W. M. Hugle, retired. Hobart E. Rice, traffic representative at Detroit, appointed general agent there.

**READING.**—Oscar P. Benjamin, supervisor of transportation, appointed assistant superintendent of transportation at Philadelphia, succeeding J. Burwell Warrington, retired.

**TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.**—John A. Wicks, director of personnel, retired June 1.

**WASHINGTON TERMINAL.**—M. H. Lingenfelter, passenger station manager of the Pennsylvania at Philadelphia, appointed manager, Washington Terminal at Washington, D. C., succeeding Sidney Kerl, retired.

**WESTERN PACIFIC.**—Kenneth A. Rank, general agent at Detroit, appointed assistant to vice-president—traffic at San Francisco,



**Kenneth A. Rank**

succeeding John H. Coupin, retired. Larry E. Moe, traffic representative at Eugene, Ore., replaces Mr. Rank at Detroit.

#### OBITUARY

**Michael J. Clark**, 79, retired supervisor of electrical maintenance, Chicago terminal of the Illinois Central, died May 28 at Chicago.

**Essentials** **FOR EFFECTIVE TAMPING**

**SPEED:** McWilliams Tamper will finish tamp any raise up to 6" at speeds up to 720' per hour.

**SPLIT HEAD:** Pioneered by R.M.C., this feature permits raising of joints and spot surfacing as well as out-of-face general raises.

**TAMPING UNDER RAILS:** Machine positively tamps *under* the tie and particularly *under* the rail bearing area of the tie.

**ACCURATE CONTROL:** Operator accurately controls 16 air tamping tools, allowing tamping to be varied to meet roadbed conditions.

**McWilliams Tie Tamper**

**Railway Maintenance Corporation**

**PITTSBURGH 30, PA.**  
Designers and Manufacturers of: McWilliams Mole, Super Mole . . .  
McWilliams Tie Tamper, Crib Cleaner, Ballast Distributor . . . TieMaster . . . LineMaster . . . SpikeMaster . . . BoltMaster . . . Tie Unloader



ALFRED IDDLES

Portrait by Fabian Bachrach

## "...11,000, or 70% of Our Employees Are Buying U.S. Savings Bonds Regularly..."

"The Payroll Savings Plan, a truly 'All American' thrift program has been steadily winning employee approval all over the country. Employees of Babcock & Wilcox are an example of this fact.

"As the result of a recent campaign nearly 11,000 or 70% of our employees are now buying U. S. Savings Bonds regularly on the automatic Payroll Savings Plan. They are cultivating habits of thrift and at the same time doing their share in helping to keep our economy on a sound basis. This fine program deserves strong

support by every company."

**ALFRED IDDLES, President  
The Babcock & Wilcox Company**

The campaign to which Mr. Iddles refers was a simple, person to person canvass that put a Payroll Savings Application Blank in the hands of *every* B & W employee. B & W employees did the rest. Your State Sales Director will help you build *your* Payroll Savings Plan. Phone, wire or write to: Savings Bond Division, U.S. Treasury Department, Washington 25, D. C.

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 CAR BOLTS



Large head Lewis bolts are scientifically designed for tank car running boards—new construction or repair. Bevel under head forms waterproof seal reducing wood rot. Head pulls flush, prevents tripping. Shank and head are forged from one piece of steel for greater strength and true thickness—no need for counter boring. In Galvanized for long time economy or Black for low original cost. All are manufactured in the USA to ASTM specifications.

Ask us how you can save money on Sealtite products.

Section of head showing patented fin design which insures maximum holding power with minimum damage to wood—reduces decay and rust. Available with Lock Tight No. 2 or Std. Sq. nuts.

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CARS PURCHASED • REBUILT and LEASED  
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For All Types of Cars

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# RAILWAY AGE

Workbook of the Railways

(Adbook of the Railways, too)

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# Rolling Steel Doors

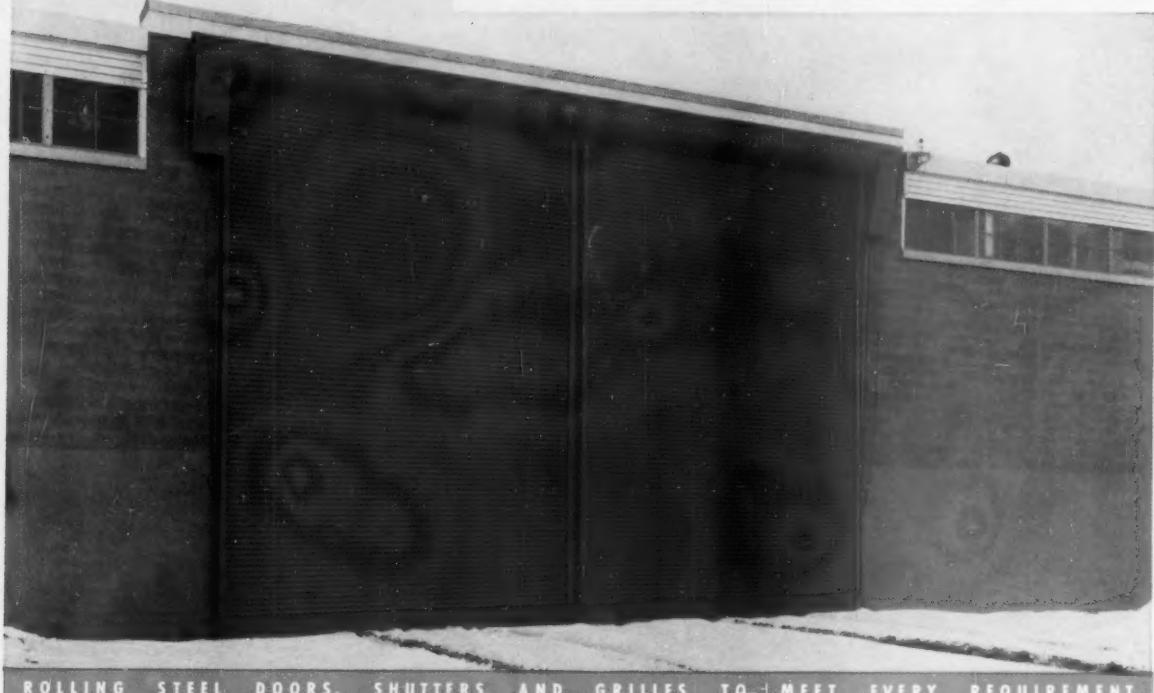
*Manually, Mechanically, or Electrically Operated*



When you consider doors—either for new buildings or for replacement in old buildings—you will be most impressed with the numerous advantages of Rolling Steel Doors. No other type of door offers the important space-saving and time-saving advantages in every day operation . . . and no other type of door offers the positive protection against intrusion and fire. The vertical roll-up action of the rolling steel door occupies no usable space either inside or outside the door opening. There are no overhead tracks or other obstructions to interfere with crane handling adjacent to door openings—the door curtain is compactly rolled up flush with the lintel and safe from any possibility of damage while the door is open. Quick-opening, quick-closing Mahon Power Operated Rolling Steel Doors, with signal arrangements and remote push-button control stations, offer the ultimate in convenience and timesaving operation—particularly in shipping and transfer docks where a number of doors are involved. Rolling Steel Doors will serve you better in any type of opening . . . their all-metal construction gives you the permanence which assures a lifetime of trouble-free service. However, before you select a Rolling Steel Door, check Specifications carefully . . . you'll find extra-value features in Mahon doors—for instance, the galvanized material in the curtain slats is BONDERIZED and DIP-COATED with synthetic enamel which is baked on at 350° prior to roll-forming. You will find many other quality and design features in Mahon Rolling Steel Doors that add up to a greater over-all value. See Sweet's Files for information including Specifications, or write for Catalog G-56.

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York and Chicago • Representatives in Principal Cities  
Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel  
Fire Doors and Fire Shutters; Insulated Metal Walls and Wall Panels; Steel Roof Decks and Long  
Span M-Decks; Permanent Floor Forms; and M-Floors (Electrified Cel-Beam Floor Systems).



ROLLING STEEL DOORS, SHUTTERS, AND GRILLES TO MEET EVERY REQUIREMENT.

Two Mahon Power Operated Rolling Steel Doors 16'-0" x 22'-4" installed in a double truck opening in Sutherland Paper Company's plant, Kalamazoo, Mich. Thirty-seven other Mahon Rolling Steel Doors are installed in various types of openings in this modern plant.

# MAHON



**TAPER HOLDS ROLLERS  
AGAINST CONE RIB  
AT ALL TIMES.  
NO SLIDING.**

## **THE TAPER MAKES TIMKEN® THE ONLY JOURNAL BEARING THAT DELIVERS WHAT YOU EXPECT WHEN YOU BUY A ROLLER BEARING**

**Y**OU want two things from a roller bearing: 1) To get rid of the hot box problem, and 2) to cut operating and maintenance costs to rock bottom. Only Timken® tapered roller bearings do both. It's the taper. Here's why:

**1) No lateral movement within the bearing.** The taper in Timken bearings prevents lateral movement. There's no pumping of lubricant through the seal and out of the journal box. No scuffing of rollers and races to cause bearing wear. Timken bearings always *roll the load*, never slide it.

**2) Positive roller alignment.** Because of the taper, roller ends are held snug against the rib, where wide area contact keeps

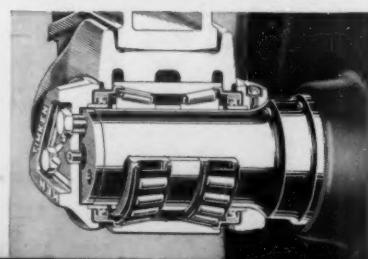
rollers properly aligned. There's no skewing of rollers to upset full line contact.

Unlike costly devices that merely act as "crutches" in an attempt to improve friction bearings, Timken bearings remove the very cause of hot boxes—the friction bearing itself. They also cut operating and maintenance costs to the bone. For instance, they cut terminal inspection time 90%, reduce cost of lubricant as much as 95%.

To get rid of the hot box problem and really cut operating and maintenance costs to a minimum, be sure to switch to Timken tapered roller bear-

ings. Then you can be certain you'll get what you're paying for. Remember, it's the *taper* that counts. 7 out of 10 of America's roller bearing freight cars are on Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".

NOT JUST A BALL □ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL  AND THRUST  LOADS OR ANY COMBINATION 



**THE TAPER MAKES**  
**TIMKEN**  
TRADEMARK REG. U. S. PAT. OFF.  
**THE BEARING**  
**YOU TRUST**